



# UNITED STATES PATENT OFFICE.

ERASTUS T. BUSSELL AND JOSEPH SMITH, OF CINCINNATI, OHIO.

## LIQUID-GAGE.

Specification of Letters Patent No. 21,814, dated October 19, 1858.

*To all whom it may concern:*

Be it known that we, ERASTUS T. BUSSELL and JOSEPH SMITH, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Graduated Liquid-Gage; and we do hereby declare that the following is a full and exact description, to wit:

The nature of our invention consists in providing a double spring valve cock with a graduated cylinder and plunger working therein, by means of which all manner of liquid substances can be measured as they are drawn from a barrel with the most desirable accuracy, and when so measured can be discharged suddenly into a jug or other vessel without the use of even a funnel.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation, reference being had to the accompanying drawings, and to the letters marked thereon—like letters referring to like parts.

Figure 1, is a perpendicular and partial sectional view of the liquid gage. Fig. 2, is a top view of the cast cock, and the spring and valves. Fig. 3, is a side view of the valves, and the spring that holds them in their seat, together with the valve rod by means of which they are actuated.

We usually make the cock A, of cast iron; tin or japan it, and cut a screw, *a*, on the end that goes into the barrel or cask. This cock has a place of ingress for the liquid (*a'* in Fig. 1,) and also a place of egress or discharge pipe, (*b*, in Fig. 1.) The course of the liquid is indicated by the crooked arrows. There is a valve chamber, *c*, cast in this cock, where an hour-glass shaped spring is located (S, S, S) the function of which is to hold and firmly press the circular valves F, F, against their seat—one against the receiving pipe A, and the other against the discharge pipe *b*.

There are lips *f, f, f, f*, cast on these pipes where the valves are located, and these lips imbed themselves into the leather valves so as to effectually prevent any leakage. The spring S, S, has a metallic cup or cap on each end, and this presses against the leather valve F. The valve rod E, passes through the valves F, F, and is provided with a shoulder and a nut for adjusting the valves so as to allow them free contact with their seats, and also to open either valve by contracting the spring S, when the lever D, is

moved either back or forward. The india rubber disk *e*, on the valve rod, serves to close up the hole through which this rod passes, and thus prevent the liquid, in the act of discharging, from escaping around said rod.

The bracket *d'* serves as a fulcrum for the lever D, when it is used to open and close the valves. The bracket *d*, serves as a guide for lever D, and also has stops, or recesses, into which the lever is dropped—one at each end of the slot—when it is desired to hold either of the valves open.

The tube or measure B, is usually made of tin—sheet tin—and is firmly soldered to the cock A, at its lower end. The plunger *c'*, operated through the plunger rod C, moves up and down in this tube, or measure. The chain G, with a pin *h*, at its lower end, and the graduated link *g*, at its upper end—where it is attached to the plunger handle by means of a screw, serves to limit the movements of the plunger:—This is done by tubes *h', h', h', h'*, which are soldered onto the outside of the large measure, at suitable distances from its lower end, so as to determine the size of the vacuum within, and so, of the amount of liquid to be admitted.

When a certain amount of liquid is to be drawn, the first thing to be done is, to insert the pin *h*, into the tube or hole *h'*, corresponding to the amount desired. This will limit the play of the plunger to that point. The next thing is to pull out the lever D, and drop it into the outer recess in the slotted bracket guide *d*. This pulls back the valve (which closes the mouth of the ingress pipe *a'*.) by contracting the spring S, S, S, and so holds it open until you take hold of the handle of the plunger C' and pull it up as far as the chain G will allow it to come. In thus pulling up the plunger a vacuum is formed equal to the amount of liquid desired, which thus rushes in from the barrel to fill this vacuum. Now, throw, or push back lever D, until it drops into the inner recess in the bracket guide, and you thus close the valve communicating with the cask or barrel, and open the external, or discharge valve by again contracting spring S, S, in the opposite direction. The discharge passage now being free and open, you have only to press the plunger back to its seat—when the liquid is all forced out. Then liberate the lever from the recess in the slotted bracket *d*, and the spring S, S, will

compel it to rest half way between the two extremes.

The plunger C' is packed with loosely twisted cotton yarn. The graduated link g, is for shortening or lengthening chain G, so as to adapt the liquid gage either to thin or thick liquids. The perforated disk L, covers a disk of leather, which is intended to keep the plunger rod from rubbing against the metal cap of the measure. Lever D, is slotted at the lower end, by means of which it is allowed to vibrate up or down, and so move the valve rod on a straight line instead of causing its end to describe a circle.

We know by experience, that this liquid gage is "useful", and as we verily believe

the cock, with its valve recess, its double spring valves and the manner of operating them, together with the method of graduating the amount of liquids drawn—to be entirely "new."

What we claim therefore, is—

The double spring valve, composed of valves F, F,—spring S, and rod E, or their equivalents,—combined with a measuring faucet, as shown and described above.

ERASTUS T. BUSSELL.  
JOSEPH SMITH.

Witnesses:

JOS. E. LYNN,  
AUSTIN T. EARLE.