J. BRYAN.

Sirup Gage.

No. 201,593. Patented March 26, 1878.

Fig. 1

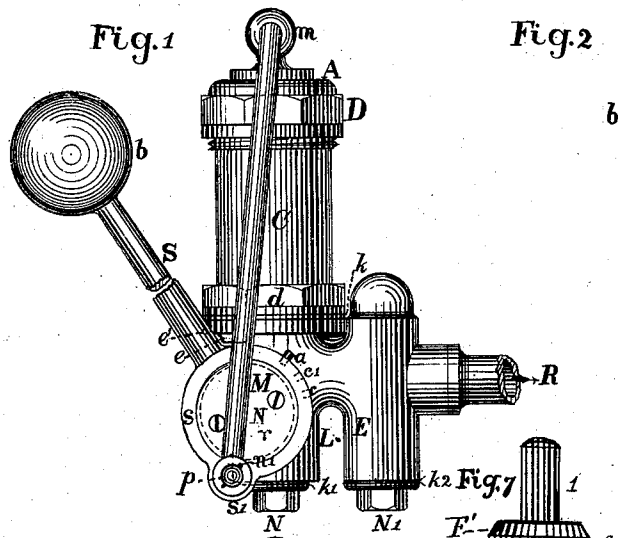

Fig. 2

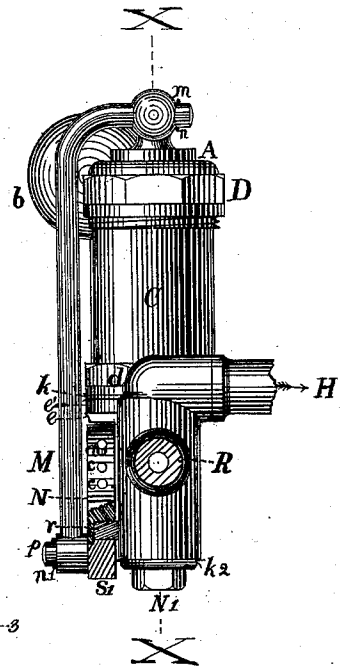

Fig. 7

Fig. 8

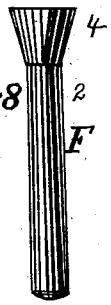

Fig. 3

Fig. 4

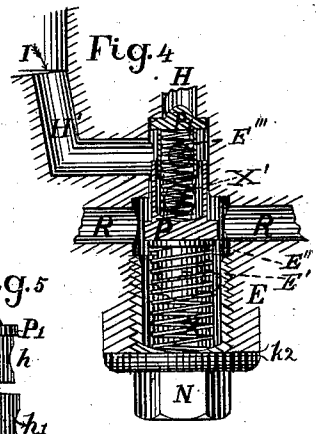

Fig. 5

Fig. 6.

Attest

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JOHN BRYAN, OF CANTON, ILLINOIS.

IMPROVEMENT IN SIRUP-GAGES.

Specification forming part of Letters Patent No. **201,593**, dated March 26, 1878; application filed July 21, 1877.

To all whom it may concern:

Be it known that I, JOHN BRYAN, of the city of Canton, county of Fulton, State of Illinois, have invented certain new and useful Improvements in Sirup-Gages, of which the following is a specification:

My invention consists of a force-pump, so constructed and combined with valves that, by its movements, it successively supplies a bottle, first, with a measured quantity of one kind of liquid, and subsequently with another kind of liquid.

In the accompanying drawings, making part of this specification, Figure 1 is a side elevation of a gage embodying my invention, and Fig. 2 is an elevation of that end of same which is at the right hand in Fig. 1. Fig. 3 is a vertical central section of same, taken at the line X X of Fig. 2. Fig. 4 is a similar section of that portion of the device shown at the right hand in Fig. 3, said section being enlarged; and Fig. 5 is a side elevation of the valves shown in Fig. 4. Fig. 6 is a modified form of valve E‴. Figs. 7 and 8 show enlarged views of the separate parts of valve F′.

A indicates the pump-piston, cylindrical in form, and playing in cylinder C, which it fits closely. A gland, D, screwed onto the upper end of cylinder C, confines packing *o*, and presses same against the piston A, thus preventing any liquid from passing out of the cylinder. The lower end *d* of the cylinder C is screwed onto the valve-seat W. The piston is provided at the top with a journal-box, *m*, in which is located and turns the lever M, curved at top sufficiently to clear the gland D, and extended down below the length of the cylinder, and terminated in an eye working on a round stud or pivot, *p*, and secured to the stud by a movable pin, *n*′, passed through the stud outside of the eye. The stud is fixed in the projection *s*′, which forms part of an annular collar, *s*, which revolves on a stationary disk, *r*, and is held in place by a plate, N, screwed into the disk *r*, and whose edge overlaps the edge of collar *s*. A lever, S, attached to collar *s*, to the left of rod M, terminates in a handle, *b*, preferably spheroidal.

The amount of revolution which the handle is permitted to make is regulated by a pin, *a*, in the collar *s*, and a stub, *e*, projecting from the under portion of the flange *e*′. Projecting below the portion W is the extension L, perforated with a hole, the lower portion of which is provided with a thread. A bolt, N, preferably provided with a hollow space, T, screws into this opening. Between a flange on bolt N″ and the bottom of projection L is placed a gasket, k^1, for the purpose of rendering the joint tight. The portion E is similarly provided with an opening at the bottom, into which screws a bolt, N′, preferably provided with a hole, T′, and a flange, between which latter and the bottom of portion E is placed a gasket, k^2. A gasket, *k*, is also placed between flange *d* on cylinder C and flange *e*′ on valve-seat W. The stuffing-box I screws into an opening in the top of the valve-seat W. Through the stuffing-box the valve-stem F passes. Around the valve-stem F and under stuffing-box I is placed stuffing *o*′.

Valve F′ is made in two parts, as shown in Figs. 7 and 8, the valve being inverted in those figures. The stem F is provided with an enlargement, 4, into which the screw 5 is inserted. By this arrangement the gasket 3 is held in place by enlargement 4 and valve-head F′. The valve F′ works in the chamber F″, and is normally held against the top of the chamber F″ by the spring X″. Similarly the valve E′ is held in position in chamber E″ by a spring, X. The valve E′ is made with a solid piece projecting below flange P, and over which extension is passed the spring X. The upper part of valve E′ is hollow, and is provided with two openings, *h*′ *h*′, diametrically opposite each other, and sometimes with four, as shown by the dotted line, Fig. 5. The small valve E‴ works in the hollow part of the large valve E′. The lower part of the valve E‴ is made hollow, and provided with one or more openings, as shown in Fig. 5, preferably as many as can be made with safety to the valve.

The spring X′ is placed in the hollow of both valves E′ and E‴, and holds the valve E‴ against its seat.

Valve E‴ is preferably made with a head, *u*, and solid stem *w*′, as shown in Fig. 6, in which case spring X′ surrounds stem *w*′.

The spring X′ is not as stiff as spring X, and consequently does not interfere with its proper action.

The openings or valve-chambers in the extensions E and L are made of different sizes in different parts of their lengths, (see Fig. 3,) for the purpose of forming valve-seats and accommodating the different sizes of valves. There is a passage, H′, connecting the valve-chamber of portion E with the cylinder C, and an opening, H, connecting the upper portion of said valve-chamber with a pipe connected with a vessel containing one of the liquids to be pumped. The opening R, passing through both valve-chambers, is the effluent passage, and R′ the influent passage, of the other liquid.

Passage R′ may enter from the end, as in Fig. 3, or from the side opposite the side shown in Fig. 1.

The method of operating the machine is as follows: After making proper connections with the liquids and the vessel to be filled, the lever S is depressed, thereby elevating piston A and forming a vacuum in cylinder C. The pressure of the atmosphere on the liquid connected with pipe H forces the said liquid (which, for convenience' sake, will be called the "first liquid") through pipe H, forces down valve E‴, as seen in Fig. 3, and passes into the cylinder C. Lever S is now raised, and piston A is thereby lowered, and in descending forces liquid No. 1 back through passage H′; but as pressure is now removed from the top of valve E‴, and spring X′ forces it up against its seat, as in Fig. 4, the liquid passes through one of the holes *h* in valve E‴, and down through said valve into valve E′, thereby forcing this latter valve down, and allowing the liquid to flow into the passage R. As piston A approaches the bottom of the cylinder it strikes against the top of the valve-stem F, lowers valve F′, and allows liquid No. 2, which is under pressure, and is connected with passage R′, to force its way through the passage R, and consequently to mix with liquid No. 1. As soon as a sufficient quantity of liquid No. 2 has passed through, lever S is lowered, thereby removing the pressure from valve-stem F, and allowing spring X″ to raise the valve F′ and cut off the supply of liquid No. 2.

It is evident from this description of the operation that to a certain quantity of liquid No. 1 (determined by stroke of piston A, regulated by pin *a* and stub *e*) any desired quantity of liquid No. 2 may be added.

This pump is intended, primarily, as a sirup-gage, and has many advantages over those now in use, substantially as follows:

First. My pump is a suction and force pump combined, and those now in use for the same purpose are only force-pumps, and consequently the liquid No. 1 is necessarily placed in a reservoir above the pump, while with my pump the reservoir containing liquid No. 1 can be put in any convenient place in the vicinity.

Second. In my gage there is but one working joint which comes in contact with the liquid, and this joint is at the stuffing-box on the top of the cylinder, and hence there is very little liability to leak; but the other gages now in use are very leaky after short wear.

Third. In my pump the solid plunger is used, thereby avoiding packing both the rod and piston, and merely necessitating the easier operation of packing the rod.

Fourth. In my pump the pitman working the piston is bent over the top of the pump, and connects directly with the piston-rod, and avoids the two joints used in other gages, and consequently simplifies the construction. Moreover, having but one joint here, there is less lost motion and less jar in my pump than in pumps of other gages now in use.

What I claim as new, and desire to secure by Letters Patent, is—

1. Valve F′, combined with spring X″, piston A, valve-seat, as W, and spring-seat, as N″.

2. Valve E′, constructed as described, and combined with spring X, valve-seat, as W, and spring-seat, as N″.

3. The combination of valves E and E‴ and springs X and X′, substantially as set forth.

4. Combination of valve-seat W, provided with passages R, R′, H, and H′, valve-chambers, constructed as described, valves F′, E′, and E‴, provided with springs X, X′, and X″, cylinder C, provided with any suitable piston A, operated by any suitable mechanism, substantially as set forth.

5. Combination of lever S, handle *b*, ring *s*, disk *r*, plate N, curved pitman M, substantially as and for the purposes set forth.

6. Combination of lever S, handle *b*, ring *s*, disk *r*, plate N, pin *a*, stub *e*, pitman M, substantially as set forth.

JOHN BRYAN.

In presence of—
WM. H. HEMENOVER,
F. B. LERMOND.