W. H. JOHNSTON AND H. J. WILLIAMS.

LIQUID DISPENSER.

APPLICATION FILED NOV. 26, 1915.

1,360,298. **Patented Nov. 30, 1920.**

2 SHEETS—SHEET 1.

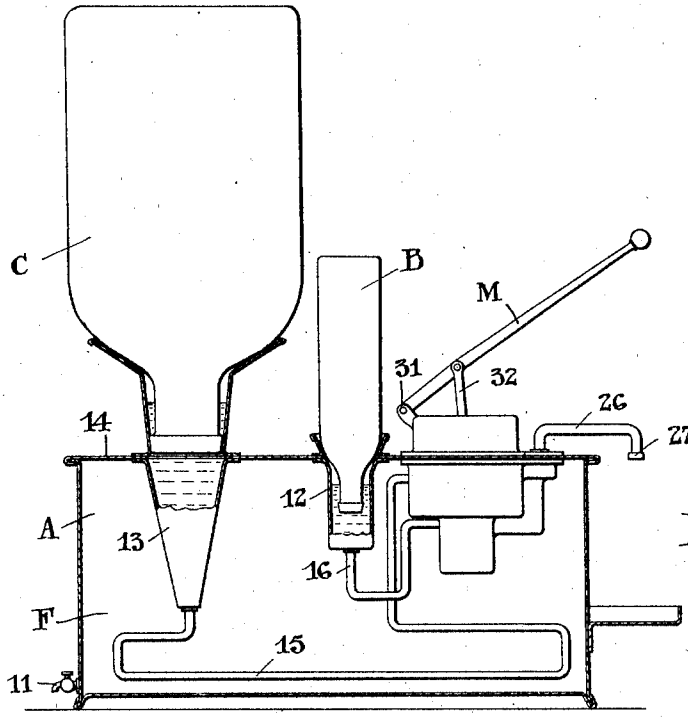


Fig. 1.

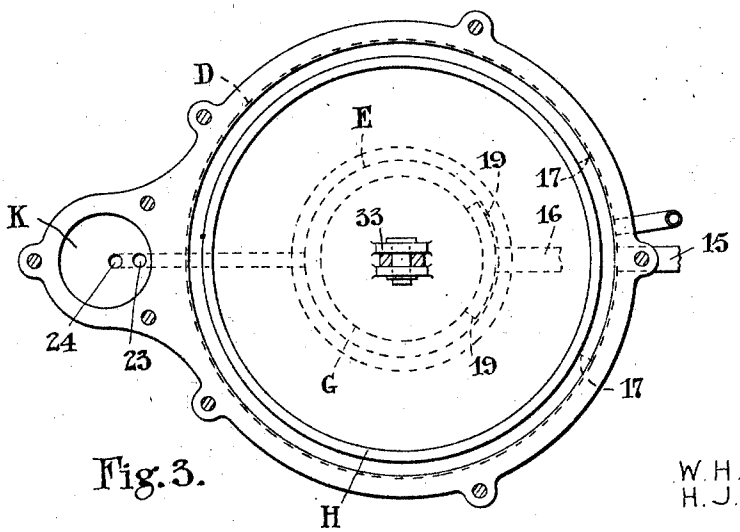


Fig. 3.

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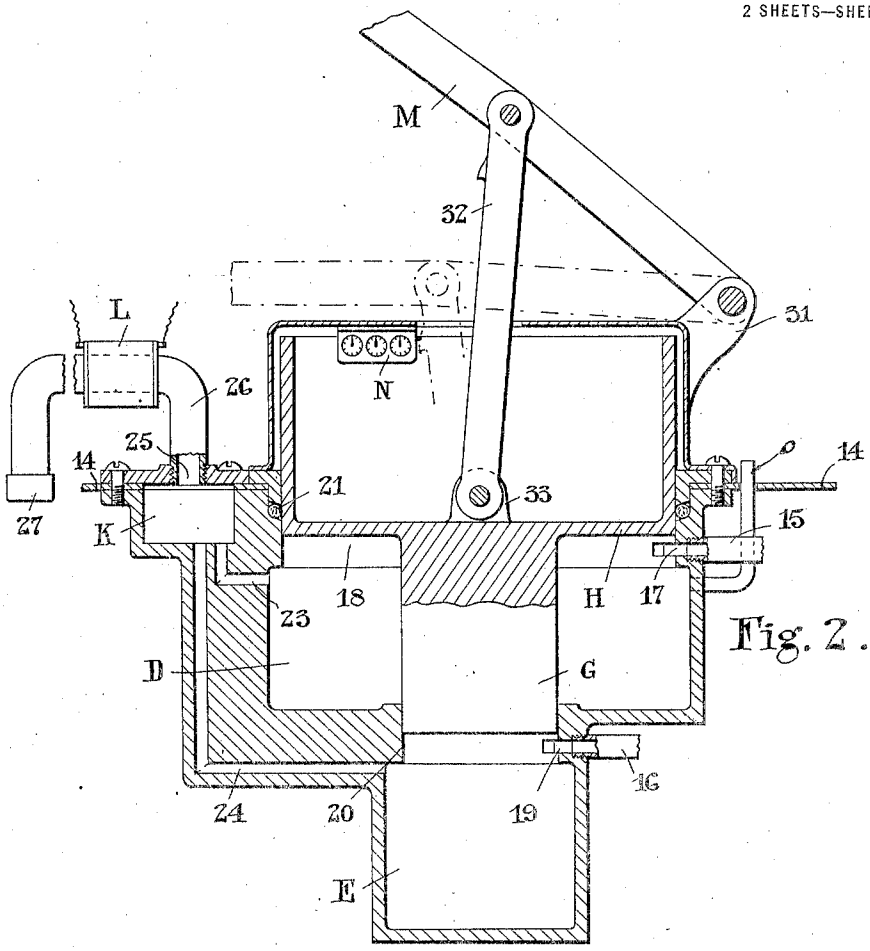


Fig. 2.

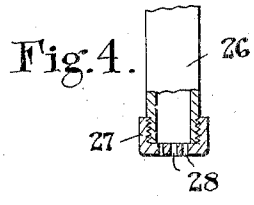


Fig. 4.

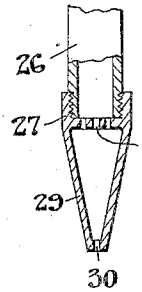


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY JOHNSTON AND HENRY JOHN WILLIAMS, OF NEW YORK, N. Y., ASSIGNORS, BY MESNE ASSIGNMENTS, TO UNITED BEVERAGE MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

LIQUID-DISPENSER.

1,360,298. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed November 26, 1915. Serial No. 63,509.

To all whom it may concern:

Be it known that we, WILLIAM HENRY JOHNSTON and HENRY JOHN WILLIAMS, citizens of the United States of America, residing at New York city, in the State of New York, United States of America, have invented certain new and useful Improvements in Liquid-Dispensers, of which the following is the specification.

This invention relates to dispensing, mixing or serving apparatus for liquids or the like and general object of the invention is to enable an exact proportioning, effective mixing and an aeration of a plurality of liquids to be obtained. The invention is particularly useful or effective to the mixture of a syrup or concentrate in given proportion with water or other suitable liquid. In this type of apparatus it is important that exact proportion should be maintained between the syrup and water, and that an effective mixture and aeration should take place before the mixed ingredients are discharged in the form of the finished drink.

Still further object of the invention is to provide such a type of device as may be readily combined with heating or cooling means in order that the drink to be served therefrom, may be hot or cold as desired.

The invention comprises, generally stated a mixing chamber, means for supplying proportional quantities of liquids thereto, and producing a swirling mixture therein, means for discharging the mixed product under pressure in such a manner as to effect aeration. For complete understanding of the invention, however, reference is made to the accompanying specification and drawings. In the drawings,

Figure 1 is a sectional elevation of an embodiment of the invention.

Fig. 2 is a sectional detail through the measuring cylinders.

Fig. 3 is a plan of the measuring cylinders.

Fig. 4 is a sectional view of one form of nozzle.

Fig. 5 is a sectional detail of an alternative form of nozzle.

Like characters of reference indicate corresponding parts in all figures.

Referring to the drawings, A represents a casing adapted to contain the principal working parts and also to contain means for heating or cooling the beverage served. In the embodiment illustrated the device may be used as a cooler and ice may be placed therein, the ice water being drained through a suitable outlet cock 11.

B represents the container for the syrup or concentrate and C the container for the water which is to be mixed therewith. These containers are conveniently in the form of inverted bottles and in order to secure uniform pressure from the liquids being fed so that they may be fed in uniform proportions, a barometric feeding arrangement is provided, consisting of wells 12 and 13 into which the necks of the bottles B and C extend, the said necks extending through the top 14 of the casing and being supported thereby. It will be obvious, however, that other suitable means of support for the bottles may be provided.

From the wells 12 and 13 the liquids and syrup are adapted to pass by conduits 15 and 16 to the cylinders D and E, which are conveniently cast together and arranged in coaxial relation as shown. The conduit 15, from the well 13, which supplies water from the container C, leads through the cooling chamber F and may be surrounded by ice therein, and may also be extended to any desired extent in order to secure the requisite cooling. Said conduit 15 opens into a port 17 in the constricted neck 18 on the upper part of the cylinder D. The conduit 16 opens into the port 19 formed in the constricted neck 20 at the top of the cylinder E. The diameters of the respective cylinders D and E correspond with the proportion in which it is desired to mix the syrup and liquid.

Coöperating with the cylinders are plungers G and H which in the embodiment illustrated are formed integral with each other. The smooth outer surface of the plunger G fits the smooth inner surface of the neck 20, while the smooth outer surface of the plunger H fits the smooth inner surface of the neck 18. Escape of any liquid from the cylinder D is insured by a suitable packing gland 21 at the top of the cylinder. It will be observed that as the plungers fit the necks 18 and 19, when they are in innermost position an annular space will remain between the plungers, and the walls of the cylinders, and from these annular spaces,

ports 23 and 24 lead to the mixing chamber K, said ports being suitably bored or formed in the casting which forms the cylinders D and E. The ports 23 and 24 open at the top of the cylinders, and at the bottom of the mixing chamber K, while the mixed liquid is adapted to pass from the top of the mixing chamber through an outlet 25. This arrangement has an effect of producing a swirling motion of liquid in the chamber K, which will thoroughly mix the constituent parts of the liquid.

From the outlet 25, a conduit 26 leads to a discharge nozzle 27. This nozzle is designed to effect aeration of the product, which is accomplished by forming a plurality of fine orifices 28 in the nozzle, through which the mixed liquid is discharged under pressure. In the form of nozzle shown in Fig. 5, the fine streams from the orifices are combined by a tapering nozzle member 29 and discharged through the orifice 30 in a fine stream. Should it be desired to heat the liquid instead of cooling it, an electric or other form of heater L of well-known design may be attached to or combined with the conduit 26.

The pistons G and H may be operated by any convenient mechanism. As shown, an operating lever M is pivoted to a bracket 31 on the casing and has a link 32 pivoted near the end to the same, the opposite end of the link being pivoted to a bracket 33 on the interior of the piston H.

If desired a suitable counter N may be provided which will be operated by the movement of the link 32 and by which the number of drinks served by the dispenser may be indicated in a well-known way.

To prevent the producing of a vacuum in the cylinder D, an air vent in the form of a small conduit O may be provided leading from the upper part of the cylinder.

In operation the container B is filled with the syrup or concentrate and the container C is filled with the water, with which it is to be mixed. The apparatus is designed for use with a variety of syrups and liquids. The water may be charged with carbon dioxid or not, and the apparatus might even be used to mix pastes or semi-plastic substances.

The normal position of the plunger is the raised position shown in Fig. 2. It will be seen that in this position both cylinders D and E will be filled by gravity from the containers B and C. The barometric feed arrangement insures uniform atmospheric pressure. A pressure feed might however be used if desired.

When it is desired to serve a drink from the apparatus, the lever M is operated in a downward direction forcing both plungers downwardly. This movement will at once cut off the ports 17 and 19, preventing any further flow of liquid or syrup. The continued movement will force the liquid and syrup contained in the cylinders D and E through the ports 23 and 24 into the mixing chamber K. Owing to the fact that the liquid and syrup are introduced from the bottom and at one side of the mixing chamber a swirling motion will be produced therein which will effect the mixing thereof.

The further downward motion of the lever will assert a pressure on the mixed liquid forcing it through the conduit 26 and discharge nozzle 27, under pressure. This will result in the production of a plurality of fine streams, which immediately on leaving the nozzle will absorb a quantity of air, thus giving the desired aerated effect to the drink finally produced.

The amount of pressure which comes from the degree of aeration may be regulated by the pressure on the lever M. It will be observed that the liquids are not only mixed under pressure; but that they are also discharged under pressure. Immediately on raising the plungers G and H on the return movement of the lever M, water and syrup will flow into the cylinders D and E under gravity.

As many changes could be made in the above constructions and many apparently widely different embodiments of our invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawing shall be interpreted as illustrative and not in a limiting sense.

What we claim as our invention, is:

1. In combination, a mixing chamber, having a top outlet and means for producing a swirling mixture of liquids in the chamber in an upward direction and discharging it through the outlet.

2. In combination, a mixing chamber having outlet, means for supplying proportional quantities of different liquids to the chamber and means for producing a swirling mixture of liquid in the chamber upwardly from the bottom and discharging it through the outlet under pressure.

3. In combination, a mixing chamber, having an outlet and means for producing a swirling mixture of liquid in the chamber upwardly from the bottom and discharging it through the outlet under pressure within the chamber.

4. In combination, a mixing chamber having an outlet, non-mechanical means for producing a swirling mixture of liquid in the chamber from the bottom upwardly and discharging it from the chamber and aerating it.

5. In combination a mixing chamber having an outlet, means for producing a swirling mixture of liquid under pressure in the

chamber from the bottom upwardly and discharging it through the outlet, and means for aerating the liquid during discharge.

6. In combination, means for supplying a plurality of liquids at constant pressure, means for maintaining the pressure constant, and unitary means for withdrawing a proportionate amount of each liquid.

7. In combination, means for supplying a plurality of liquids at constant pressure, means for maintaining the pressure constant, unitary means for withdrawing a definitely determined proportionate amount of each liquid, and means for mixing the liquids together.

8. In combination, a casing having two cylinders formed therein and a mixing chamber with ports connecting the cylinders with the mixing chamber, a discharge nozzle leading from the mixing chamber, pistons in the cylinders, means for operating the pistons, liquid containers having barometric feeds operatively connected to the cylinders.

9. In combination, a plurality of cylinders having inlet and outlet ports, means for combining the liquids passing through the outlet ports, plungers in the cylinders controlling the inlet ports, liquid containers connected to said inlet ports.

10. In combination, two co-axial cylinders opening into each other, each having inlet and outlet ports, means for combining the streams from the outlets, plungers in the cylinders controlling the inlet ports, means for operating the plungers, means for supplying liquids to the inlet ports.

11. In combination two cylinders, each having constricted necks with inlet ports in the neck and each having outlet ports in the wider part, plungers fitting the constricted necks and adapted to control the inlet ports, means for operating the plungers, means for combining the liquids passing through the outlet ports.

12. In combination two cylinders, each having constricted necks with inlet ports therein and outlet ports in the wider parts of cylinders, mixing chamber connected to the outlet ports, plungers fitting the constricted necks, and adapted to control the inlet ports, means for actuating the plungers.

13. In combination two cylinders, each having constricted necks with inlet ports therein and outlet ports in the wider parts of cylinders, a mixing chamber connected to the outlet ports, plungers fitting the constricted necks, and adapted to control the inlet ports, means for actuating the plungers, and a nozzle connected to the mixing chamber.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

WILLIAM HENRY JOHNSTON.
HENRY JOHN WILLIAMS.

Witnesses:
JOHN T. MACGREGOR,
RUSSEL B. SMART.