No. 855,310. PATENTED MAY 28, 1907.

T. HENTGEN.

MEASURING PUMP.

APPLICATION FILED OCT. 5, 1906.

Fig. 1

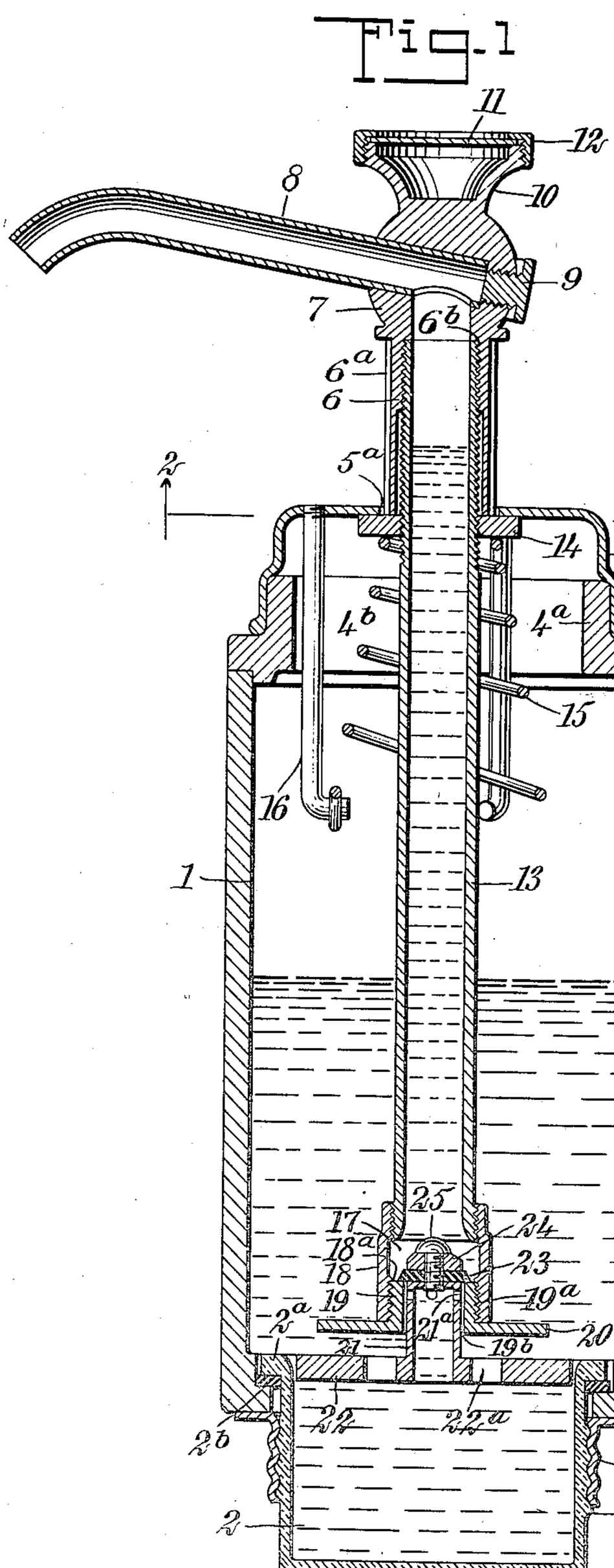
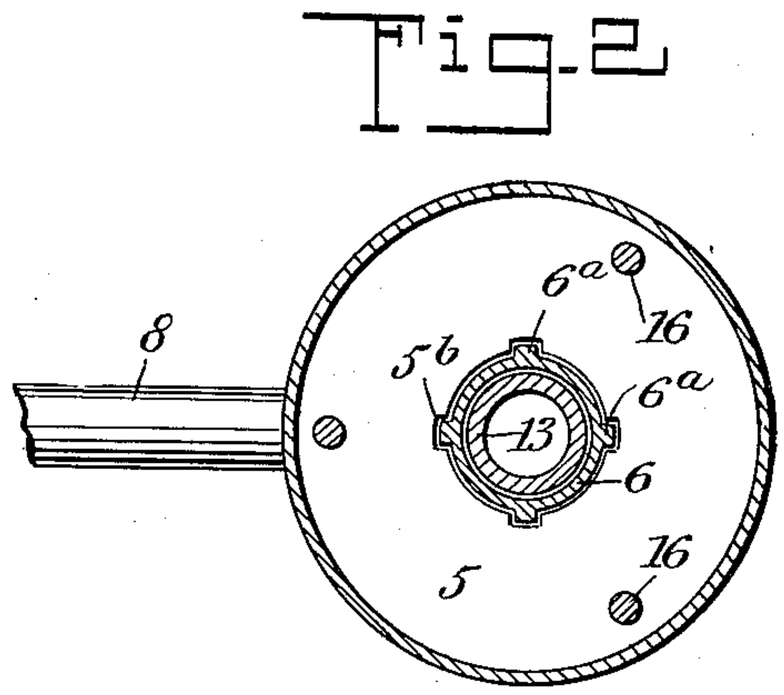


Fig. 2



WITNESSES

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MEASURING-PUMP.

No. 855,310. Specification of Letters Patent. Patented May 28, 1907.

Application filed October 5, 1906. Serial No. 337,638.

To all whom it may concern:

Be it known that I, THEODOR HENTGEN, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, county and State of New York, have invented a new and Improved Measuring-Pump, of which the following is a full, clear, and exact description.

My invention relates to soda water fountains, and particularly to pumps for faucets designed to discharge from a suitable receiver the syrups used in soda water, and has for its principal objects to provide means adapted to enable a reciprocating pump to retain the liquid that has once passed therein, and to measure and discharge a pre-determined quantity of syrup from a receptacle at each stroke of the pump. Such objects and others hereinafter referred to, are accomplished by the means illustrated in the accompanying drawings, in which

Figure 1 is a vertical transverse central section of a pump embodying my invention attached to a receptacle, partly broken away; and Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1.

As illustrated in the drawings, 1 represents a receptacle of any suitable construction having a well 2 detachably secured to the receptacle 1 and preferably provided with a flange 2^a, bearing upon a flexible gasket or washer 2^b which is supported upon a flange 1^a formed on the lower portion of the receptacle 1. A thread 2^c is formed upon the well 2 adapted to engage the thread of a sleeve 3 which is provided with a flange 3^a, adapted to bear against the flange 1^a of the receptacle 1. By means of such construction the well 2 is firmly attached to the receptacle 1 and may be detached therefrom when desired, so as to readily cleanse or renew the well. A cover 4 of any suitable construction is mounted upon the top of the receptacle 1 and preferably provided with a hub 4^a having an enlarged aperture 4^b. The lower portion of a cap or bridge 5 surrounds the hub 4^a of the cover and is provided with a central aperture 5^a through which extends a sleeve 6 preferably formed integral with a head 7 which supports a discharge spout 8. The sleeve 6 is provided with longitudinal ribs 6^a which engage corresponding recesses 5^b formed in the top of the cap or bridge 5. The ribs 6^a of the sleeve 6 by engaging said recesses 5^b of the bridge 5, enable the sleeve to be moved in the direction of its length through the aperture 5^a of the cap 5, at the same time guarding said sleeve against rotary or torsional movement.

The head 7 is provided with a detachable plug 9 having a threaded engagement with the head 7 in line with the bore of the spout 8, which may be readily detached from the head, so as to enable the bore of the spout to be freely cleansed when desired. The head 7 is provided with a flange 10 adapted to support a name plate 11, which plate is secured in place upon said flange by means of an annular collar 12 having a threaded engagement with the edge of said flange. The sleeve 6 is provided with an interior thread 6^b, by means of which the sleeve has a threaded engagement with a tube 13 which extends at its lower end into the lower portion of the receptacle 1. The upper portion of the tube 13 is provided with an outer thread, which engages the inner thread 6^b of the sleeve 6, and also engages a lock nut 14 which is mounted upon the tube 13. A spring 15 surrounds the tube 13 and the lower coil of said spring is supported upon the lower end of pendent arms 16, the upper ends of which arms are attached to the top of the cap 5. The spring 15 holds the nut 14 normally against the under side of the top of the cap 5. The lower end of the tube 13 is provided with a valve chamber 17 which is preferably formed by means of a coupling 18 having its upper end connected with the lower extremity of the tube 13 by means of a threaded engagement, or otherwise secured thereto, and having its lower end provided with an inner thread 18^a which engages a corresponding outer thread 19^a of a hub 19 having a disk 20 connected therewith. The hub 19 is provided with a longitudinal aperture 19^b, preferably cylindrical in outline, the walls of said aperture forming a cylindrical valve seat.

A tubular valve 21 is constructed with a side wall adapted to slide on the valve seat 19^b and is provided with inlet ports 21^a which are adapted to extend opposite the valve seat 19^b when the valve is closed, as shown in Fig. 1, or to project above the top of said valve seat, so as to establish free communication between the hollow interior of the valve 21 and the bore of the tube 13. A disk or plunger 22 is formed on the tubular valve 21, and is preferably provided with perforations or slots 22^a, extending through the disk in line with the disk 20 of the valve

seat. The interior opening of the valve 21 also extends through the disk 22. A gasket 23 is attached to the upper end of the valve 21 and extends over on to the top of the hub 19, so as to close the opening between the valve seat 19[b] and the valve 21. The gasket 23 is preferably made of rubber or other flexible material, and is secured in position by means of a metallic washer 24, attached to the upper end of the valve 21 by means of a stud screw 25.

When the device is in operation and pressure is applied to the name-plate 11 on the head of the pump, the head and tube 13 carried thereby are moved bodily in the direction of their length against the tension of the spring, thereby forcing the lower end of the tube 13 and its connected mechanism into the well 2 of the receptacle. As the plunger 22 is forced into the well 2, the resistance of the syrup contained in the well retards the downward movement of the disk 22, and the disk 20 is thereby brought in contact with the upper surface of the valve disk 22, and the valve ports 21[a] projected beyond the end of the valve seat 19[b] into communication with the valve chamber 17 and the bore of the tube 13. When said ports are so arranged, the syrup in the well 2 passes through the interior bore of the tubular valve 21 and out through the inlet ports into the valve chamber 17, and the interior of the tube 13.

When the pressure is released from the name-plate 11, the tension of the spring 15 forces the tube 13 upward bodily in the direction of its length, until the nut 14 comes in contact with the under surface of the cap 5, and stops the upward movement of said tube. As the tube 13 is moved bodily upward by means of the spring 15, the valve disk 22 drops below the disk 20 of the valve seat, thereby bringing the gasket 23 in contact with the upper end of the hub 19, and closing the joint between the valve 21 and its seat, so as to retain within the tube the syrup contained therein.

When the disk 22 drops downward from the disk 20 during the upward movement of the tube 13 and its connected mechanism, the syrup or other liquid in the receptacle 1 passes between the disks 20 and 22 and through perforations or slots 22[a] formed in said disk, and into the well 2, thereby refilling the well.

The tube 13 is continuously filled or nearly filled with syrup, as indicated by dotted lines in Fig. 1, so that with each stroke or movement of the plunger, the same quantity of syrup is discharged through the spout 8 as is taken into the interior of the tube from the well 2, thereby measuring as well as discharging the desired quantity of liquid from the receptacle.

In some kinds of soda water a smaller quantity of syrup is required than in others, and it is therefore desirable to discharge the syrup in the desired quantities. This is accomplished by adjusting the tube 13 on the sleeve 6, so as to extend the disk 22 normally into the well 2 at the desired elevation. Inasmuch as each stroke of the pump forces into the tube 13 the quantity of syrup which is contained in the well 2 below the disk 22, if the disk 22 is arranged in the well 2 in a line nearer the bottom of the well than that shown in Fig. 1, the quantity of syrup displaced from the well 2 and forced into the tube 13 and out of the discharge spout 8, will be less than discharged through the tube and spout when the disk 22 is arranged at the top of the well 2.

By partially unscrewing the tube 13 in the sleeve 6 said tube and sleeve are in effect lengthened, so as to project the disk 22 farther into the well 2 and consequently displace a smaller quantity of syrup from the well 2 into the tube 13 and out of said tube through the discharge spout 8.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A pump comprising a tube provided at one end with a valve seat extending longitudinally of the tube, a valve movable longitudinally on said seat, and provided with a plunger disk, substantially as shown and described.

2. A pump comprising a tube provided at one end with a valve seat extending longitudinally of the tube, a valve adapted to slide longitudinally on said seat, and provided with a perforated plunger disk, and a well adapted to receive said disk, substantially as shown and described.

3. A pump comprising a tube provided with a valve seat, a tubular valve adapted to slide lengthwise of said seat and provided with an open interior, and inlet ports connected therewith, and a gasket adapted to close the joint between said valve and its seat, substantially as shown and described.

4. A pump comprising a tube provided with a valve seat and a laterally extending flange, a tubular valve adapted to slide lengthwise of said seat and provided with inlet ports adapted to be closed by said valve seat, and a gasket secured to said valve and adapted to overlap the joint between the valve and seat, substantially as shown and described.

5. A pump comprising a tube movable bodily in the direction of its length and provided with a longitudinal valve seat, and a laterally extending flange connected therewith, a tubular valve adapted to slide lengthwise of said seat, having an open end and provided with inlet ports adapted to be arranged opposite said valve seat, and a perforated disk connected with the lower end of said valve, substantially as shown and described.

6. The combination with a receptacle having a well extending below the bottom of said receptacle, and a pump comprising a tube movable bodily in the direction of its length in said receptacle, and provided on its lower end with a longitudinal valve seat and a laterally extending flange connected therewith, a tubular valve adapted to slide lengthwise of its seat, and provided with an open end and inlet ports adapted to be closed by said seat, and a plate connected with said valve adapted to travel in said well, substantially as shown and described.

7. The combination of a receptacle having a well extending below the bottom of said receptacle, and a pump movable bodily in the direction of its length in said receptacle, and provided with a longitudinal valve seat, a tubular valve adapted to slide lengthwise of said seat having an open end and provided with inlet ports adapted to be closed by said seat, a plate connected with said valve adapted to travel in said well, and means adapted to adjust the normal position of said plate in said well, substantially as shown and described.

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

THEODOR HENTGEN.

Witnesses:
ROBERT W. HARDIE,
JNO. M. RITTER.