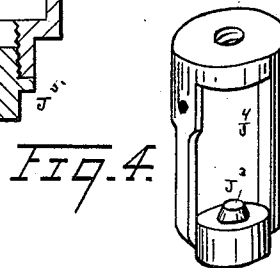
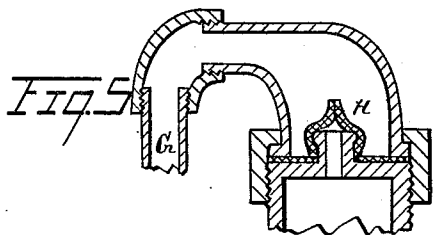
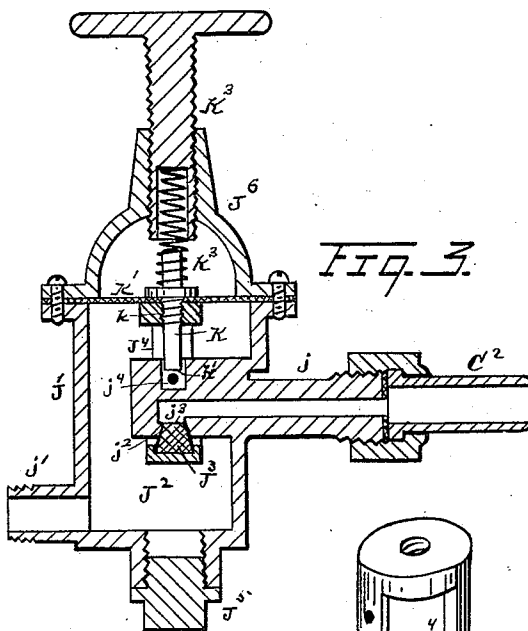
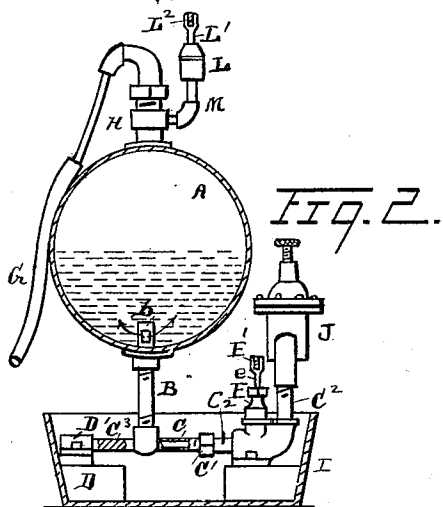
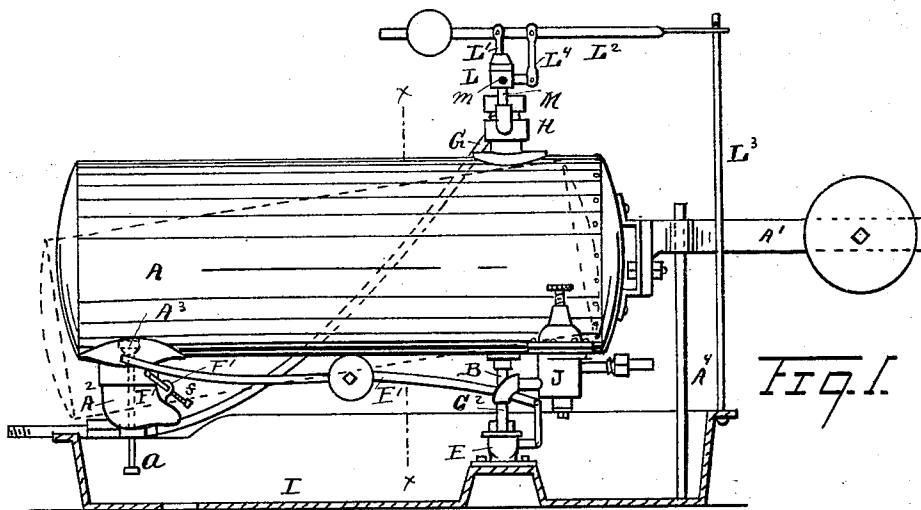


(No Model.)

J. MOREHEAD.
BEER PUMP.

No. 465.943.

Patented Dec. 29, 1891.



Witnesses
John Schuman.
John F. Miller

Inventor
John Morehead
By his Attorney
Newell S. Wright.

UNITED STATES PATENT OFFICE.

JOHN MOREHEAD, OF DETROIT, MICHIGAN.

BEER-PUMP.

SPECIFICATION forming part of Letters Patent No. 465,943, dated December 29, 1891.

Application filed February 7, 1891. Serial No. 380,605. (No model.)

To all whom it may concern:

Be it known that I, JOHN MOREHEAD, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Beer-Pumps; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My present invention relates to certain new and useful improvements in an automatic beer-pump; and it consists of the devices and appliances hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation embodying my invention. Fig. 2 is a vertical cross-section on the line *x x*, Fig. 1. Fig. 3 is a detail view of the construction of the regulator. Fig. 4 is a separate view of the yoke and valve located in the pressure-regulator. Fig. 5 is a detail view of the construction of the check-valve in the air-exit pipe.

My invention is more particularly designed as an improvement on a similar device for which an application for United States Letters Patent is now pending, Serial No. 341,532, filed February 24, 1890.

I carry out my invention as follows:

A represents a tilting chamber supported at one side, its center of gravity upon a water-inlet pipe B, said pipe engaged with a tubular rocking shaft C, journaled at one end upon a support D, as shown at D', and at the other end in a stuffing-box C' upon a city supply-pipe C². The shaft C communicates thus with the pipe B and with a city water-supply pipe C². The end of the pipe C opposite the stuffing-box is closed, as shown at C³. Within the chamber the support B preferably terminates with a cap *b* to throw the water laterally as it enters.

E denotes any suitable cut-off valve located in the supply-pipe C² and arranged to open when the chamber A is in normal condition, so as to admit water thereinto, and to close when the chamber is tilted to prevent the ad-

mission of water into the chamber while it is discharging the water accumulated therein. To this end the valve-stem *e* is engaged with a weighted arm E', the free end of which rests upon a bar F at the rear end of the chamber A. Said bar may be constructed as a crank-shaft engaged in a socket F', in which it may be adjusted to any desired position to control the movement of the arm E' and held in a given position by a set-screw *f*. As so arranged the valve is closed by the descent of the rear end of the weighted arm when the chamber tilts and is raised when the chamber returns to its normal position.

The chamber A is provided with a weighted arm A'.

G denotes an air-pipe leading from the interior of the chamber A, at the top thereof, to the beer-keg.

H is any suitable check-valve for controlling the passage of air from the chamber A through the air-pipe. By this construction it is apparent that when the chamber tilts the valve H closes, the back-pressure of the air in the pipe G effectually holding the valve closed until the chamber tilts again and a predominate air-pressure is secured in the chamber by the water-pressure entering thereinto.

The chamber A is provided with an outlet-orifice A², and a valve A³ controls the discharge of water therefrom. As shown, the valve-stem *a* projects beneath the chamber and strikes the base of a discharge-pan I, located beneath the pump, when the chamber tilts, thereby opening the valve, which seats itself again immediately upon the discharge of the water and the return of the chamber to normal position. The said pan is provided with a waste-pipe I'.

In the water-supply pipe C², I prefer to locate a pressure-regulator J to control the amount of pressure desired to be applied upon the beer, as the water-pressure is liable to be greater than the desired pressure of the air.

While I do not limit myself exclusively to any precise construction of the pressure-regulator, the one shown herewith is made as follows:

J' is the case, provided with tubular arms j j' , connected with the supply-pipe C^2 , the arm j admitting the water into the case and the arm j' discharging it therefrom. The arm j is located above the arm j' and is constructed with a valve-seat j^2 at the point of the outlet-orifice j^3 , through which the water passes from the arm j into the chamber J^2 of the regulator.

J^3 is the valve, located in a yoke J^4 , engaged at its upper end upon the stem K of a diaphragm K' , located over the top of the chamber J^2 . To this end said stem and yoke may have a screw-threaded engagement the one with the other, as shown at k . The top of the yoke rides over the inner end of the arm j , in which end the lower extremity of the stem K is seated, as shown at k' . Said stem is seated at its lower end in a socket j^4 on the arm j , the socket forming a guide for the stem as the diaphragm is moved.

In constructing the regulator J it will be convenient to leave the case J' open at the base in order to form the valve-seat j^2 , the said opening being closed by a plug J^5 .

The surface of the valve J^3 , it should be understood, has a small area, while the surface of the diaphragm K' has a comparatively large area.

J^6 is a cap covering the chamber J^2 when the valves located therein are in place. Upon the upper end of the stem K is located a spring k^3 , the tension of which is regulated by a screw K^3 , having a threaded engagement in the cap J^6 . The diaphragm K' may consist of any suitable material, as of a flexible piece of rubber.

The action of the pressure-regulator is as follows: The tension of the spring k^3 is adjusted according to the air-pressure desired. When the pressure in the tilting chamber is lower than the pressure of the said spring, it is evident that the spring will force the diaphragm downward, carrying with it the yoke J^4 and opening the valve J^3 , allowing the water freely to enter the chamber J^2 and pass into the chamber A . When, however, the pressure in the chamber A is greater than that of the spring k^3 , the back-pressure upon the diaphragm K' will lift it, seating the valve J^3 and cutting off the entrance of water into the chamber until the pressure in the chamber A is diminished.

Besides the check-valve H , controlling the passage of air from the chamber A , I also provide an additional inlet and relief valve L , which may be located in a branch pipe M , communicating with the chamber through the coupling between the pipe G and the chamber and provided with an air-inlet orifice m . This construction utilizes the one opening into the chamber for the air exit and inlet and enables the valve L to be made as an ordinary plug-valve or piston, which is raised by the action of the lever when the chamber is tilted and by the pressure of the air against its lower end when the pressure

within the chamber becomes so great as to require the valve to act as a relief-valve. The valve-stem L' , as shown, is engaged with a weighted lever-arm L^2 , which at one end is connected with a rod L^3 , engaged upon the discharge-pan I . The said arm is fulcrumed upon a standard L^4 . When the chamber tilts, it is evident the valve is lifted, opening the orifice m , allowing air to enter the chamber as the water is discharged. This valve, however, not only admits air into the chamber, but also acts as a relief or safety valve. By means of the weight on the arm L^2 the pressure of the valve can be adjusted as desired. Should the pressure within the chamber become too great, it will overcome the pressure of the valve and allow the air to escape. As I contemplate the construction of the chamber A from sheet metal, this safety provision becomes essential. The construction of the pump is thus simple, economical, and efficient and not liable to get out of order.

The operation of the device as a whole will now be readily understood. Water entering the chamber A condenses the air therein above the water until the weight of the accumulated water overcomes the weight upon the arm A' , forcing the air under pressure out through the air-pipe. When the chamber tilts, the check-valve at the top closes and prevents the air from passing back through the pipe into the chamber. On the return of the chamber A the action is automatically repeated. The chamber A is provided with a leg A^1 to limit its return.

What I claim as my invention is—

1. In a beer-pump, the combination, with two supports, one of which communicates with a supply-pipe and is provided with a cut-off valve, a channeled rock-shaft journaled in the supports, a tilting chamber supported by the shaft and communicating with the supply-pipe thereby, an air-outlet at the top of the chamber, a water-outlet at the bottom, an arm connected with the stem of the cut-off valve, and an adjustable stop at the rear of the chamber, engaging with the free end of said arm and adapted to regulate the movement of the same, substantially as described.

2. In a beer-pump, the combination, with two supports, one of which communicates with a supply-pipe and is provided with a cut-off valve, a tilting chamber upon said supports and communicating with the supply-pipe thereby, an air-outlet at the top and a water-outlet at the bottom of the chamber, an arm connected with the stem of the cut-off valve and provided with a weight, a bar at the rear end of the chamber, engaging with the free end of the arm, and a set-screw for holding the bar in its desired position for adjusting the movement of the arm, substantially as described.

3. In a beer-pump, the combination, with a tilting chamber provided with a water inlet and outlet, and an air-outlet at the top of the chamber, adapted to communicate with the

beer-vessel, of a relief and safety device consisting of a pipe having an air-inlet and communicating with the interior of the chamber through the coupling between the air-outlet
5 and the chamber, a valve within the pipe for controlling said inlet, a standard adjacent to the pipe, a lever pivoted in the standard, one end of which is weighted and engages with the stem of said valve, and a standard rigidly

secured to a support at one end and engaging with the opposite end of the lever with its free end, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN MOREHEAD.

Witnesses:

N. S. WRIGHT,
JOHN F. MILLER.