R. W. WITTEMANN.
PRESSURE REGULATOR FOR PUMPS.
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Fig. 1.

Fig. 2.

Attest:

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PRESSURE-REGULATOR FOR PUMPS.

1,029,409.


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To all whom it may concern:

Be it known that I, RUDOLPH W. WITTEMANN, a citizen of the United States, and resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Pressure-Regulators for Pumps, of which the following is a specification.

This invention relates to pressure regulators for pumps.

In the use of pressure regulators on pumps that are used for pumping or conveying perishable liquids such as beverages, fruit-juices and the like, it has been found to be greatly objectionable to employ ordinary constructions of such automatic regulators, partly on account of their complicated construction, which makes cleaning quite difficult and partly because impurities, sediment or incrustations lodged in parts of the regulating device and rendered the same unreliable thus causing more or less disturbances in the flow from the pump.

The object of my invention is to provide a new and improved pressure regulator for such pumps which avoids these objections, is simple, strong and durable in construction, is simple and reliable in operation, and can be taken apart easily and rapidly for the purpose of cleaning it and which regulates the pressure in such a manner that when there are any irregularities in the outflow, or sudden or unforeseen resistances appear in the outflow they cannot have any effect on the liquid entering at the inlet or suction end of the pump.

In the accompanying drawings in which like letters of reference indicate like parts in all the figures: Figure 1 is a vertical longitudinal sectional view of my improved pressure regulator for pumps. Fig. 2 is a horizontal sectional view through the same, on the line a—a Fig. 1.

The pump may be of any suitable system, style or kind of pressure pump, and in the embodiment of my invention as illustrated in the drawings I have shown a rotary pump 1 having a flanged inlet neck 2, at the side and a flanged neck 3 at the top, to which is bolted the hollow cross piece 4, having the outlet neck 5, and to the top of which cross piece the air chamber 6 is secured, said cross piece also having the flanged lateral neck 7.

A cylindrical chamber 8 has a removable cover 9, provided with an internally threaded guide neck 10 for a hollow screw spindle 11, provided with a hand wheel 12 at the upper end, and said guide neck serves to receive loosely the upper end of the stem 13 of a valve 14 with seats on the horizontal valve seat 15 formed on the inner end of an elbow tube 16 extending into the vessel or chamber 8 and projecting horizontally from the outer surface of the same, and provided at its outer end with a flange 17 which can be bolted to the flange of the lateral neck 7 on the cross piece 4. A helical spring 18 surrounding the valve stem 13, bears with its lower end on the valve 14 and its upper end on the lower inner end of the screw spindle 11, by means of which latter the tension of the spring 18 can be adjusted from the outside.

The chamber 8 is provided at its bottom with a lateral flanged neck 19, which can be bolted to the flange of the inlet neck 2 of the casing of the rotary pump, this neck being on the same side of the chamber 8 as the flanged outer end of the elbow 16 and below the latter. The chamber 8 is also provided at the bottom with an horizontal inlet neck 20 preferably diametrically opposite the neck 19 and in line therewith.

A vertical screen partition 21 preferably consisting of a perforated metal plate divides the chamber 8 into two compartments 22 and 23 and the edges of this screen plate are held in place by cleats 24 on the inner surfaces, the bottom and cover of said chamber 8.

The beer or other fluid enters the chamber 8 through the neck 20, passing into the compartment 22 from which it passes through the perforations of the screen plate 21 into the compartment 23, chips, pieces of tar, sediment and other coarse matter being retained in the compartment 22. From the compartment 23 the beer or other matter is drawn into the pump and there discharged under pressure through the neck 5. If, at any time, for any reason, the resistance to the outflow increases above the normal and the pressure in the pump increases above the normal, this pressure acting through the elbow pipe 16 raises the valve 14 more or less, against the tension of its spring 18 permitting an overflow of liquid from the inner end of the elbow into the compartment 23 from which this overflow liquid is then again drawn by the pump and so on until
normal pressure again exists in the outlet of the pump and the valve 14 is seated by its spring, as soon as there is an excess of pressure in the pump. As this overflow liquid is not discharged directly into a comparatively small feed or delivery pipe to the pump, but into a comparatively large compartment, it does not disturb or interfere with the constant flow of liquid to the pump, which remains constantly quiet and substantially uniform, and undisturbed notwithstanding the occasional overflow from the pump when the pressure in the latter increases temporarily above normal. After the cover 9 has been removed from the chamber 8, the perforated screen plate 21 can easily be removed and the solid matters accumulated in the chamber 22 can be washed or flooded out through the neck 20 or the entire chamber 8 can be detached by disconnecting the necks 19 and 17 from the necks 2 and 7 of the pump, and then cleaned, etc.

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

1. The combination with a pump, of a pressure tight chamber, a connection between said chamber and the suction end of the pump, an open liquid inlet port leading to said chamber, a conduit extending from the discharge end of the pump into said chamber, and a pressure relief valve in said conduit within said chamber, substantially as set forth.

2. The combination with a pump, of a chamber connected with the suction end of the pump, a conduit extending from the discharge end of the pump into said chamber, a liquid inlet for said chamber, a screen in said chamber, said screen dividing the liquid inlet side of said chamber from that containing the outlet, the said pressure relief valve and the said conduit, substantially as set forth.

3. The combination with a pump, of a chamber connected with the suction end of the pump, of a pressure relief conduit extending from the discharge end of the pump into said chamber, a valve in said pressure relief conduit within said chamber, a spring pressing on said valve to seat it, a cover for said chamber, means in said cover for adjusting the tension of the said spring, a liquid inlet for said chamber and a removable screen within said chamber, between the inlet and outlet of said chamber, substantially as set forth.

4. The combination with a pump, of a chamber connected with the inlet terminal of the pump, an overflow pipe extending from the discharge terminal of the pump into said chamber, a yielding pressure valve for said overflow pipe, within said chamber, a removable dividing screen in said chamber, and a liquid inlet for said chamber, said liquid inlet being at one side of the screen plate and the outlet and overflow pipe at the opposite side of said screen plate, substantially as set forth.

Signed at New York city in the county of New York and State of New York this 27th day of April A. D. 1911.

RUDOLPH W. WITTEMMANN.

Witnesses:

HERMANN COLBERG,
ANNA E. SCHULER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."