C. F. BRANDENBERGER.

DRAIN STORAGE PUMP.

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1,266,658. Patented May 21, 1918.

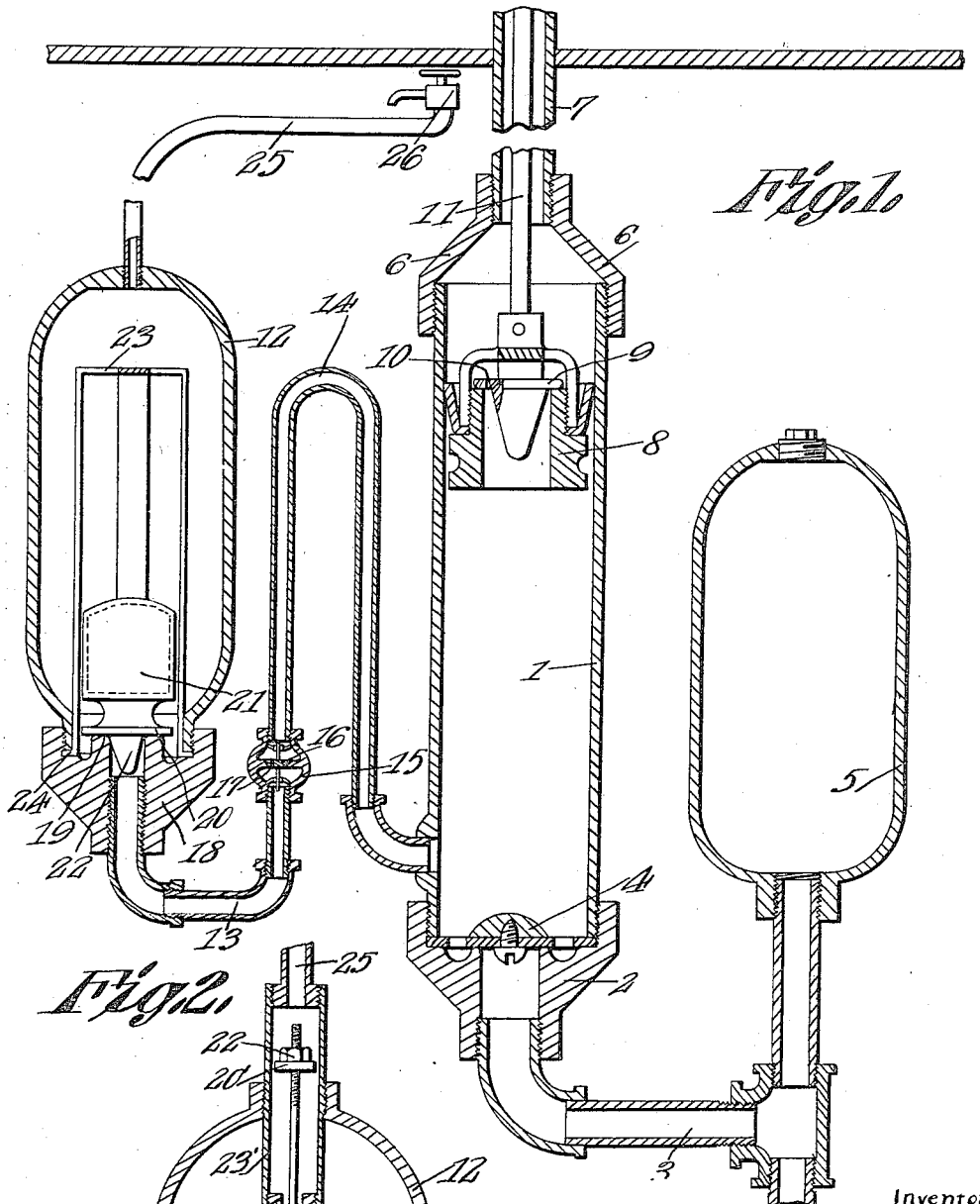


Fig. 1.

Fig. 2.

Witnesses

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DRAIN STORAGE-PUMP.

1,266,658. Specification of Letters Patent. Patented May 21, 1918.

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To all whom it may concern:

Be it known that I, CARL F. BRANDENBERGER, a citizen of the United States, residing at Fort Madison, in the county of Lee and State of Iowa, have invented a new and useful Drain Storage-Pump, of which the following is a specification.

The present invention appertains generally to pumps, and relates to improvements in pumps for cisterns and wells, it being the object of the invention to provide a novel drain storage device for pumps used in shallow wells or cisterns, whereby when the pump is idle, the head of water above the piston or plunger will drain downwardly into the present device, to avoid freezing, and to flow back into the barrel when the pump is started, to facilitate the starting of the pumping action of the water.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a vertical median section of a drain storage pump embodying the present improvement, portions being broken away and others shown in elevation.

Fig. 2 is a sectional view of modification.

The pump embodies a vertical barrel or cylinder 1 having a head or reducer 2 attached to its lower end for the connection of the main supply pipe 3, a clack or other suitable check valve 4 being seatable on the head 2 for supporting the water or other liquid thereabove within the barrel. A vacuum chamber 5 is connected to the pipe 3 to facilitate the flow of water into and through the barrel during the operation of the pump. A cap or head 6 is secured to the upper end of the barrel for the connection of the lower end of the eduction or discharge pipe 7. A piston or plunger 8 is slidable within the valve 1 and has an upwardly opening check valve 9 provided with a restricted aperture 10 which permits the head of water to drain downwardly past said valve 9 and piston, but this aperture is not sufficiently large to interfere with the pumping of the water. The pump rod 11 extends upwardly through the pipe 7, being connected at its lower end to the piston for reciprocating it to lift the water.

The present device embodies an upright drain storage chamber 12 connected at its lower end by means of a pipe 13 with the barrel 1 adjacent to the lower end thereof, above the check valve 4. This chamber 12 is disposed at one side of the barrel 1, and the pipe 13 has an upwardly projecting loop 14, providing a trap for the water between the bend thereof, and that upwardly projecting terminal of the pipe 13, which is connected to the chamber 12. That vertical portion of the trap between the bend of the loop 14 and chamber 12 is provided with a check valve including a casing 15 disposed therein inclosing an upwardly opening valve member 16 having a restricted aperture 17 permitting of the restricted flow of water from the barrel 1 to the chamber 12, said valve member 16 opening to permit of the free flow of water from the chamber 12 back into the barrel 1.

A cup or reducer 18 is threaded or otherwise engaged upon the lower reduced end of the chamber 12 for the attachment of the pipe 13, and said cup 18 has a valve seat 19 above the end of said pipe on which a disk valve 20 is seatable, said valve having a central depending conical guide member 22 to guide the valve to its seat. The valve 20 is attached to the lower portion of a float 21 of any suitable construction movable vertically within the chamber 12. An arch-shaped guide 23 is disposed in an upstanding position within the chamber 12 and is provided at its lower end with outturned flanges 24 clamped between the lower end of the chamber 12 and cup 18, and the float 21 is movable loosely within said guide.

An air vent tube or pipe 25 is connected at its lower end to the upper end of the chamber 12, and its upper end extends upwardly to a suitable point for the inflow and outflow of air, being provided with a valve 26 to control the flow of air.

When the pump is idle, the head of water can drain downwardly through the aperture 10 past the piston, then through the pipe 13 past the valve 16 by way of the aperture 17 and upwardly into the drain storage chamber 12. The water in entering the chamber 12 will raise the float 21, and the air within said chamber above the water is

forced out through the tube 25. The water is thus accumulated within the chamber 12, and can drain downwardly sufficiently to avoid freezing above the frost line. When the pump is started, the suction created by the upward movement of the piston 8 will draw the water from the chamber 12 through the pipe 13 back into the barrel 1, the valve 16 opening to permit of the free flow of water past the valve from the storage chamber, whereby to prime the pump so that it will start easily. When the water is discharged from the chamber 12, the float 21 will lower with the water level, thereby seating the valve 20, and stopping the flow, whereby to prevent the air from passing from the tube 25 through the chamber 12 and pipe 13 into the barrel 1, which would, of course, be objectionable.

Fig. 2 illustrates a modification in the valve for the drain storage chamber. Thus, a vertical tubular valve casing 23′ is threadedly or otherwise engaged through the upper end of the chamber 12 and has secured within its lower end a valve seat 19′. The float 21 has a stem 21′ extending upwardly through the upper end of the guide 23 and through the valve seat 19. A gasket or valve 20′ is fitted upon the stem 21′ above the valve seat, being held by a nut 22′ or other adjustable member threadedly or otherwise mounted adjustably upon the stem 21′. The tube 25 is connected to the upper end of the casing 23′. When the valve 21 is raised by the flow of water from the barrel into the chamber 12, this will raise the nut 22′ and valve 20′, to permit of the discharge of air from said chamber through the tube 25, and when the water is discharged from the chamber 12 back into the barrel, the float 21 in being lowered will draw the valve 20′ to its seat, thereby stopping the flow of air. The nut 22′ can be adjusted to regulate the relative position of the valve and float when desired.

Having thus described the invention, what is claimed as new is:

1. The combination with a pump having a piston for raising the liquid, and a check valve below the piston, of a drain storage chamber connected to the pump between said piston and valve, means for providing a restricted flow of liquid from the pump to said chamber and a free flow in the reverse direction, said chamber having an air vent, a valve controlling the flow of air through said chamber by way of the vent, and a float within said chamber controlling the last mentioned valve to open and close it when the float is raised and lowered, respectively.

2. The combination with a pump embodying a vertical barrel, a piston working in the barrel, and a check valve for supporting the water in the barrel, of a drain storage chamber, a pipe connecting the lower portion of the chamber with the barrel below the piston and above said valve, a check valve in said pipe for restricting the flow of water from the valve to said chamber, the upper end of said chamber having an air vent, a valve for stopping the flow of air from said vent into said pipe, and a float within said chamber connected to the last mentioned valve to open it when the float is raised.

3. The combination with a pump including a piston and a check valve below it, of a drain storage chamber at one side of the pump, a pipe connecting the lower end of said chamber with the pump between said piston and valve, said pipe having an upwardly projecting loop between the pump and chamber providing a trap, means for restricting the flow of liquid from the pump into said chamber and permitting a free flow in the opposite direction, said chamber having an air vent, a valve for stopping the flow of air from said vent through said pipe, and a float within said chamber connected to the last mentioned valve for opening it when the float is raised.

4. The combination with a pump including a barrel, a piston working therein, and a check valve for supporting the liquid in the barrel, of a chamber at one side of the barrel, a pipe connected to the lower end of said chamber and to the barrel between the piston and valve, said pipe having an upstanding loop between said chamber and valve providing a trap, a check valve in one vertical portion of said loop between the bend thereof and said chamber for restricting the flow of liquid from the valve to the chamber, said chamber having an upper air vent, a valve for stopping the flow of air from said vent through said pipe, and a float within said chamber for opening the latter valve when the float is raised.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CARL F. BRANDENBERGER.

Witnesses:
H. J. SCHROEDER,
WM. F. KIEL.

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