

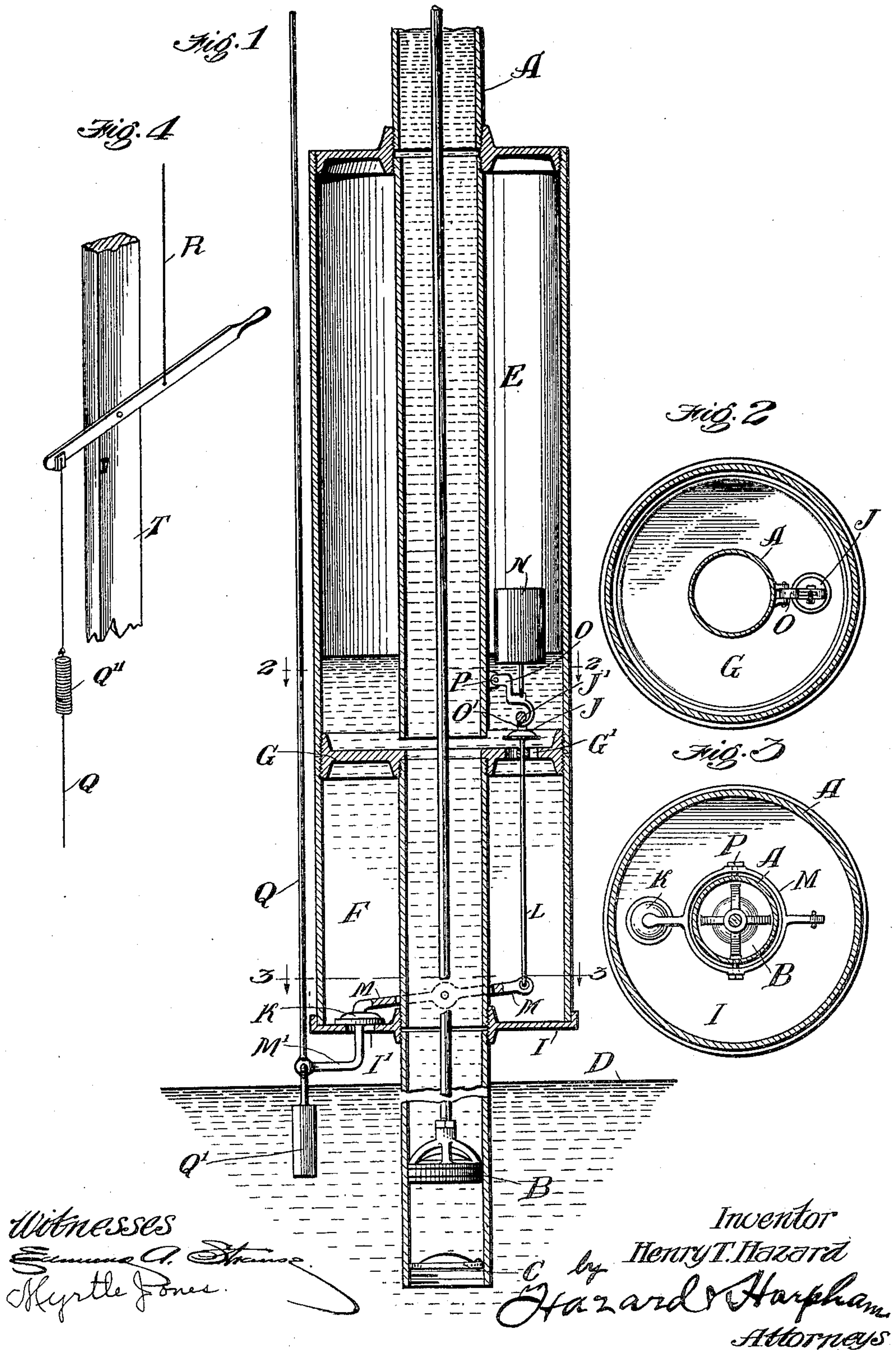
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H. T. HAZARD.

MEANS TO REPLENISH THE AIR CHAMBERS OF PUMPS WITH AIR.

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UNITED STATES PATENT OFFICE.

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MEANS TO REPLENISH THE AIR-CHAMBERS OF PUMPS WITH AIR.

No. 812,423.

Specification of Letters Patent.

Patented Feb. 13, 1906.

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To all whom it may concern:

Be it known that I, HENRY T. HAZARD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Means to Replenish the Air-Chambers of Pumps with Air, of which the following is a specification.

My invention consists in dividing the air-chamber of a pump into a main chamber and a supplementary chamber and providing means to fill the supplementary chamber with air and means to transfer the same therefrom into the air-chamber.

The object of my invention is to provide a simple, reliable, and inexpensive attachment for air-chambers on pumps by means of which the air-chamber thereon may be kept constantly replenished with air. I accomplish this object by means of the device described herein and shown in the accompanying drawings, in which—

Figure 1 is a central vertical section of a pump embodying my invention. Fig. 2 is a transverse section thereof, taken on line 2 2 of Fig. 1. Fig. 3 is a transverse section taken on line 3 3 of Fig. 1. Fig. 4 is a fragmentary view of the framework of a windmill-tower having pivoted thereon the throw-out lever.

In the drawings, A represents the well-casing. B is a piston therein, and C is the foot-valve. Disposed above the normal water-line D and surrounding the well-casing is the air-chamber E, immediately below which is the supplementary chamber F. Dividing these chambers is a partition G, through which is a port G' for the passage of air and water. The bottom I of the supplementary chamber is provided with a port I' for the passage of air and water. These two ports are controlled by the valves J and K, the valve J being mounted on the upper end of the valve-stem L and the valve K being rigidly affixed to the oscillating lever M. This lever extends around the well-casing and is pivoted centrally thereon and has a downwardly-projecting extension M', to which the operating-rod and weight are pivoted. Pivoted in the air-chamber is the float N. This float is pivoted to a swinging bifurcated lug O, the bifurcations O' of which extend under and around the knob J' on the valve. This bifurcated lever is pivoted, as at P, and when the float is down by reason of the fact that

the air-chamber is full of air, as shown in Fig. 1, the bifurcations will extend around and below the knob on the valve and prevent the valve from falling and seating itself. However, when the water-level in the air-chamber rises it will carry with it the float. This will elevate the bifurcated lever O and release the knob on the valve, so that whenever the water in the air-chamber rises above the bottom of the float the valve will be released from engagement with the bifurcated lever. Now this mechanism being attached to a pump of the character shown, the elevation of the valve-operating rod Q will unseat the valve K and seat the valve J. This will permit all the water in the supplementary chamber F to run out through the port I', and the chamber will fill with air from the outer air. When the rod Q drops down, as it will when released, the weight Q', carrying it down, will carry with it the valve K, closing the port I' and opening the port G', when all the air in the supplementary chamber will pass up through the port G' into the air-chamber and the supplementary chamber will fill with water.

I have shown in Fig. 4 the ordinary throw-out lever S, pivoted to the framework T of a windmill, the operation of which is adapted to throw the sails of a windmill into or out of the wind, the rod R connecting the windmill mechanism with the throw-out lever for that purpose. On the free end of the lever I have attached the valve-operating rod Q, so that upon the movement of the throw-out lever the valves will be operated. I have placed on the valve-operating rod Q a coil-spring Q'', the object of which is to permit the movement of the cut-out lever, notwithstanding the valves are locked by reason of the fact that the float in the air-chamber is in its normal depressed position, there being plenty of air in the air-chamber. This will prevent the operation of the valves when the air-chamber is filled with air and at the same time permit the operation of the throw-out lever. However, when there is a shortage of air in the air-chamber and the water-level therein has risen in consequence thereof the valves will be released and the movement of the cut-out lever will operate the valves and the air-chamber will be replenished with air.

In the absence of the float and the spring on the rod Q at each operation of the throw-

out lever the supplementary chamber would be emptied of water, and thereby affect the efficiency of the pump; but with the float and a spring on the rod no water will be discharged unless there is a deficiency of air in the air-chamber; but these two elements may be dispensed with and not depart from the spirit of my invention, nor is it necessary to the successful operation of my invention that the operating-rod Q should be disposed on the outside of the well-casing A, as shown, as it can be placed on the inside of the casing and be made to operate the valves, a slight mechanical change only being necessary to adapt it for that purpose.

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

1. Means to replenish the air-chamber of a pump with air, comprising a main air-chamber and a supplementary chamber below the same, a partition therebetween, a port in said partition and a port in the bottom of the supplementary chamber and valvular means to alternately open and close said ports.

2. A pump provided with a main air-chamber and a supplementary chamber divided by a partition, a valve-controlled port in said partition for the passage therethrough of air and water, a valve-controlled port in the supplementary chamber for the passage of air and water, and valvular means to alternately open one port and close the other.

3. Means to replenish the air-chamber of a pump with air, comprising two chambers disposed one above the other, a partition between said chambers, a port therein, a port in the bottom of the bottom chamber, and valves controlling said ports, the said valves being workably connected together and adapted one to be closed as the other is opened and means to open and close said valves.

4. In a pump having an air-chamber, the herein-described means to replenish the cham-

ber with air comprising the supplementary chamber F, a partition G between the chambers, a port G' therein, a port I' in the bottom of the supplementary chamber and means to control said ports comprising the valves J and K, the valve J secured to the swinging lever M and the swinging lever M and means to swing said lever.

5. In an air-chamber for a pump provided with a supplementary chamber below, the said chambers being divided by a partition having a port therein and a port in the bottom of the supplementary chamber, the herein-described swinging lever pivotally mounted in the supplementary chamber and carrying at one end a valve adapted to control the port between the chambers and at the other end a valve adapted to control the port in the bottom of the supplementary chamber, in combination with means to operate said lever.

6. In a pump having a main air-chamber and a supplementary chamber of the character herein described, the herein-described float disposed in the main air-chamber, adapted when in its depressed position to lock the valves controlling the port in the partition between the chambers and the port in the bottom of the supplementary chamber, and prevent the operation of the valves and to unlock said valves when in its elevated position.

7. In combination a pump-cylinder, an air-chamber thereon a supplementary chamber below the air-chamber; a port between the chamber and a port in the bottom of the supplementary chamber and valvular means to control said ports in combination with means to operate said valvular means.

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

HENRY T. HAZARD.

Witnesses:

WATTS T. ESTABROOK
MILTON C. LENOIR.