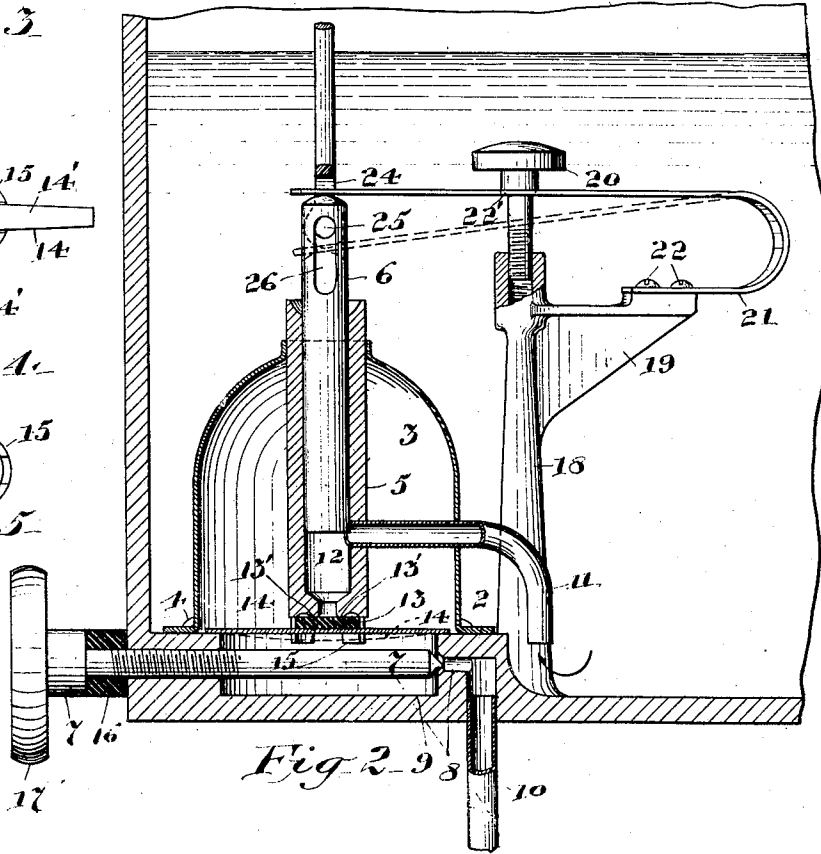
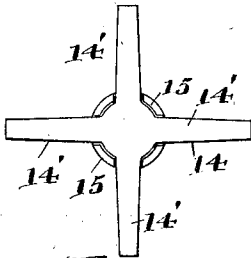
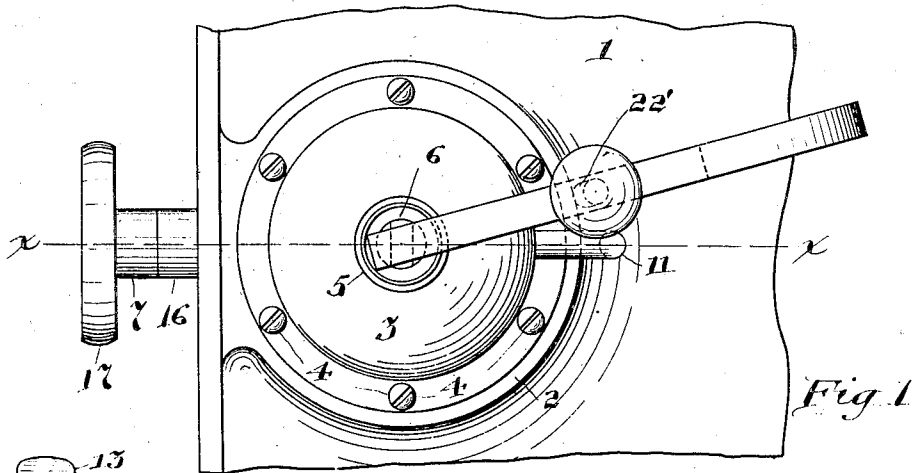


H. L. THOMPSON.
STEAM PUMP.
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UNITED STATES PATENT OFFICE.

HERBERT L. THOMPSON, OF ELGIN, ILLINOIS.

STEAM-PUMP.

938,724.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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To all whom it may concern:

Be it known that I, HERBERT L. THOMPSON, a citizen of the United States, residing at No. 39 Commonwealth avenue, in the city of Elgin, county of Kane, and State of Illinois, have invented certain new and useful Improvements in Steam-Pumps, of which the following is a specification.

My invention relates to improvements in feed pumps adapted particularly for the automatic feeding of flash boilers.

The object of my invention is to provide regulating or throttling means in a feed pump which will be automatically controlled. And a further object of my invention is to provide a yieldable check valve and a resilient holder therefor.

Other objects will appear hereinafter.

With these objects in view my invention consists in a pump suitably located in a water supply tank and submerged therein, a pump cylinder and a plunger therefor, and automatic means to regulate the movement of said plunger in order to maintain a constant pressure.

My invention further consists in various details of construction and arrangement of parts all as will be hereinafter fully set forth and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a top elevation of my improved feed pump in its preferred form, Fig. 2 is substantially a vertical section taken on line $x-x$ of Fig. 1, Fig. 3 is a detailed perspective view of the pump check valve, and Figs. 4 and 5 are detailed bottom elevations.

Referring now to the drawings, 1 indicates the water supply, and 2 the pump base integral therewith. A dome 3 preferably of copper is rigidly secured to the base 2 by means of the screws 4. Contained within the dome 3 and securely connected thereto is a barrel or cylinder 5 in which the plunger 6 is adapted to reciprocate. To provide clearance for a needle valve 7 designed to open and close the discharge orifice 8 a circular depression 9 is provided in the base 2. The delivery pipe 10 is connected with the flash boiler, not shown, and is secured in the base 2. The suction pipe 11 through which water is adapted to flow to the cylinder 5 is securely fixed in the walls of the dome 3 and

said cylinder, the inner extremity of the pipe 11 constituting the intake cylinder port 12. A rubber disk valve 13 acts as the delivery check valve and is held in its seat 13' by means of the spring or holder 14. The holder 14 comprises radial arms 14' the outer extremities of which are adapted to seat on the base 2 adjacent to the base of the dome 3. Downwardly extending projections 15 in the cylinder 5 are adapted to pass between the radial arms 14' in the holder 14 and to hold the check valve 13 in position.

The needle valve 7 is adapted to screw into the base 2 and is provided with a rubber washer 16 to render the connection waterproof. It will thus be seen that the discharge orifice 8 may be throttled at will by an operator by simply turning the handle 17. A standard 18 provided with a bracket 19 integral with the base 2 is provided to receive the adjusting screw 20 and the leaf spring 21. The standard 18 is tapped to receive the said screw 20, and the spring 21 is secured to the bracket 19 by means of the screws 22. The said screw 20 passes through an elongated perforation 22' in the spring 21 and is adapted to limit the upward movement of said spring. The vertically reciprocating pump operating rod 23 is provided with a perforated fork 24 at its lower extremity, a portion of which only is shown in Fig. 2. A pin 25 secured in perforations in the fork 24 is adapted to reciprocate in the slot 26 provided in the plunger 6 and to normally move said plunger in its upward or suction stroke. The spring 20 is adapted to press the plunger downwardly and to cause the downward or delivery stroke, the degree of pressure of which spring may be regulated by the adjusting screw 20.

The operation of the pump is as follows: When the plunger 6 is forced downwardly by the operating spring 21 water is forced through the valve 13 out through the delivery pipe 10 to the boiler, not shown. When the valve 13 opens the holder 14 springs downwardly as indicated by dotted lines, but instantly returns to the normal position when the plunger 6 begins its upward stroke. The upward or suction stroke of the plunger 6 produces a partial vacuum in the cylinder 5 so that when the port 12 is uncovered water rushes in to fill the space. It is seen that the dome 3 performs the usual function or produces a uniform pressure, and that the pump will cease to operate when the pressure in

said dome equals or exceeds the downward pressure on the plunger 6 caused by the spring 21. The pin 25 will then reciprocate in slot 26 without moving the plunger until
 5 the pressure in the dome 3 is reduced by the escape of water through the delivery pipe 10. The pump will then resume its normal action. The function of the said screw 20 is to vary the tension of the spring 21 and to vary the
 10 pressure maintained in the dome 3, which varies in accordance with the tension of said spring. The pump if worked at its full capacity would furnish water in excess of that needed in the boiler, hence the necessity of
 15 the automatic regulating or throttling means as herein provided.

While I have shown what I deem to be the preferable form of my improved feed pump I do not wish to be limited thereto as there
 20 might be many changes made in the details of construction and arrangement of parts without departing from the spirit of my invention.

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

1. In a feed pump for flash boilers, a water supply tank and a pump base integral therewith, a dome secured to said base, a
 30 centrally and vertically disposed cylinder secured in said dome, a plunger adapted to reciprocate in said cylinder, means for actuating said plunger, an intake pipe in said cylinder connecting with the water con-
 35 tained in said tank, a delivery pipe in communication with said cylinder, a yieldable check valve adapted to seat on a valve seat provided at the base of said cylinder, a resilient holder for said valve adapted to seat
 40 on said base, a slot in said plunger, and a pin provided in said plunger actuating means

adapted to reciprocate in said slot when the pressure in said dome rises to a predetermined point, substantially as described.

2. In a feed pump for flash boilers in combination with a base and a dome secured thereto, a cylinder and plunger mounted in said dome, a positive means for normally actuating said plunger in its suction stroke, an adjustable spring adapted to normally
 45 actuate said plunger in its delivery stroke connected with said base, a rubber delivery valve adapted to seat at the base of said cylinder, a resilient valve holder provided with radial arms adapted to seat on the
 50 circular edge of a circular depression provided in said base, and downwardly extending projections in said cylinder extending through said holder and adapted to hold said valve
 55 in proper position.

3. In a feed pump for flash boilers, a base and a dome secured thereto, a cylinder and plunger secured in said dome, a spring and positive means for normally actuating said
 60 plunger, means for adjusting the tension of said spring, an intake port in said cylinder in communication with a water supply provided in connection with the pump, a circular depression in said base below said cylinder, a needle valve and seat arranged in said
 65 depression forming a portion of the delivery passage, a rubber washer on the stem of said needle valve for packing the same, and a rubber check valve provided with suitable holding means at the base of said cylinder.
 70
 75

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

HERBERT L. THOMPSON.

Witnesses:

JOHN W. McQUEEN,
 NELS W. JOHNSON.