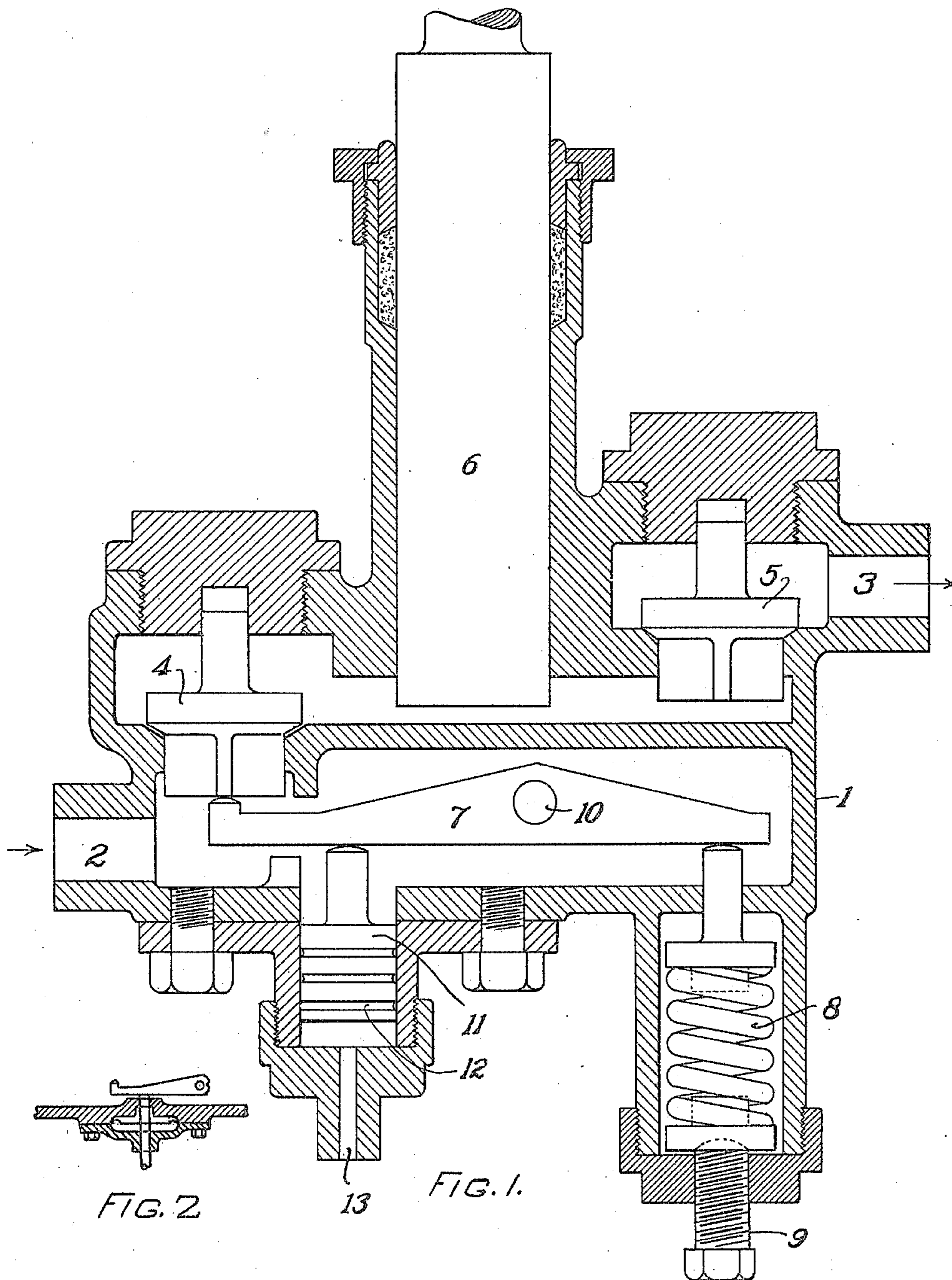


No. 816,964.

PATENTED APR. 3, 1906.

E. S. CLARK.
ADJUSTABLE PRESSURE PUMP.
APPLICATION FILED FEB. 3, 1906.



WITNESSES

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EDWARD S. CLARK, OF BOSTON, MASSACHUSETTS.

ADJUSTABLE PRESSURE-PUMP.

No. 816,964.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed February 3, 1905. Serial No. 243,977.

To all whom it may concern:

Be it known that I, EDWARD S. CLARK, of the city of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Adjustable Pressure - Pumps; and I do hereby declare that the following is a clear, full, and exact description of the same.

This invention relates to pressure-pumps in which it is desired to accumulate a pressure of some predetermined amount and then automatically prevent a further accumulation of pressure without the necessity of stopping or regulating the operation of the pump by personal attention.

Figure 1 is a vertical section of a pump-case for the purpose described, the pump plunger, valves, tripping-lever, adjustable spring, and pressure-piston being in elevation. Fig. 2 is a sectional elevation of an alternative method of transmitting the pressure beyond the pressure-valve into motion for lifting the suction-valve and shows a diaphragm used in place of a piston.

1 is the pump-case, provided with a suction-inlet 2 and pressure-outlet 3. The suction-valve 4 and pressure-valve 5 are situated near their respective inlet and outlet. A pump-plunger 6 is operatively entered into the upper part of the pump-case 1, which here forms a barrel with the usual stuffing-box, gland, and means for compressing packing about said plunger. Situated in the suction-chamber of the pump-case is a lever 7, carried on a pivot 10, one end of which bears on the under side of the suction-valve 4, the opposite end on a spring 8. This spring is capable of adjustment by means of the screw 9. Bearing on the lever 7 at some convenient point between the end which bears on the suction-valve 4 and the pivot 10, so as to obtain any desired leverage, is a piston 11, provided with liquid packing-grooves 12 or other piston-packing. This piston is so situated with relation to all other parts previously mentioned that on being moved by pressure entering the pressure-inlet 13 it lifts the suction-valve 4 from its seat and prevents it from tightly closing and at the same time compresses the spring 8 beyond the pressure originally imparted to it by the screw 9. The outlet 3 is connected by any suitable means to any receptacle in which it is desired to maintain a pressure. This receptacle is also connected by any suitable means to the pressure-inlet 13. It is obvious that these several parts can be arranged in a number of dif-

ferent ways to accomplish this same result and that the chambers containing the spring 8 or piston 11 can be made integral with or attached to the case 1 without departing from the spirit of the invention and accomplish the same result, which with the apparatus here designed would be accomplished as follows: Upon reciprocating motion being given to the plunger 6 liquid would be drawn in through the inlet 2 and suction-valve 4 and forced out through the pressure-valve 5 and outlet 3 to a suitable receptacle (such as a steam-boiler or a pressure-cylinder on a hydraulic press) and the inlet 13. As the pressure accumulates beyond the valve 5 it will attempt to force the piston 11 upward and by causing the lever 7 to rotate about its pivot 10 compress the spring 8, operatively connected to the opposite end of this lever; but in order to actually cause movement of the lever 7 the pressure acting on the piston 11 must be in excess of the tension imparted to the spring 8 by the screw 9. When this actually results, the spring 8 will partly close, allowing the lever 7 to rotate on the pivot 10, lifting the suction-valve 4 from its seat, and thus prevent a further accumulation of pressure beyond the valve 3 until the pressure is relieved or reduced between the pump-outlet 3 and the pressure-inlet 13, as in a flash-boiler by using the steam or in a hydraulic press by voiding some of the water under pressure.

It is obvious that a diaphragm may be used in place of the piston 11 in order to transmit the pressure beyond the pressure-valve 5 into motion for lifting the lever 7 and suction-valve 4. This is shown in Fig. 2, small scale.

Having thus fully described the construction and operation of one method of carrying this invention into effect, what I desire to secure by Letters Patent is as follows:

1. In a pressure-pump, the combination with an operative plunger, in a pump-case provided with an inlet and outlet valve and a compartment beneath the inlet-valve, of a lever fulcrumed in said compartment adapted to lift the inlet-valve, means for actuating said lever by the accumulation of pressure caused by said plunger, and means for opposing the action of said accumulated pressure.

2. In a pressure-pump, the combination with an operative plunger, in a pump-case provided with an inlet and outlet valve and a compartment beneath the inlet-valve, of a le-

ver fulcrumed in said compartment adapted to lift the inlet-valve, means such as a piston actuating said lever by the accumulation of pressure caused by said plunger, and means
5 for opposing the action of said accumulated pressure.

3. In a pressure - pump, the combination with an operative plunger, in a pump-case provided with an inlet and outlet valve and a
10 compartment beneath the inlet-valve, of a lever fulcrumed in said compartment adapted to lift the inlet-valve, means for actuating said lever by the accumulation of pressure caused by said plunger, and a spring oppos-
15 ing the action of said accumulated pressure.

4. In a pressure-pump, the combination with an operative plunger, in a pump-case provided with an inlet and outlet valve and a
20 compartment beneath the inlet-valve, of a lever fulcrumed in said compartment adapted to lift the inlet - valve, means for actuating said lever by the accumulation of pressure caused by said plunger, and an adjustable spring opposing the action of said accumu-
25 lated pressure.

5. In a pressure-pump, the combination

with an operative plunger, in a pump-case provided with an inlet and outlet valve and a compartment beneath the inlet-valve, of a lever fulcrumed in said compartment adapted
30 to lift the inlet-valve, means such as a piston actuating said lever by the accumulation of pressure caused by said plunger, and an adjustable spring for opposing the action of said accumulated pressure.

6. In a pressure - pump, the combination with an operative plunger, in a pump-case provided with an inlet and outlet valve and a compartment beneath the inlet-valve, of a lever fulcrumed in said compartment adapted
40 to lift the inlet - valve, means for actuating said lever by the accumulation of pressure caused by said plunger, and means for opposing the action of said accumulated pressure, at a predetermined amount.

In testimony whereof I have hereunto af-
45 fixed my signature in the presence of two sub-
scribing witnesses.

EDWARD S. CLARK.

Witnesses:

EDWIN D. SIBLEY,

ISAAC H. DAVIS.