A. B. SHULTZ.

PUMP.

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999,405. Patented Aug. 1, 1911.

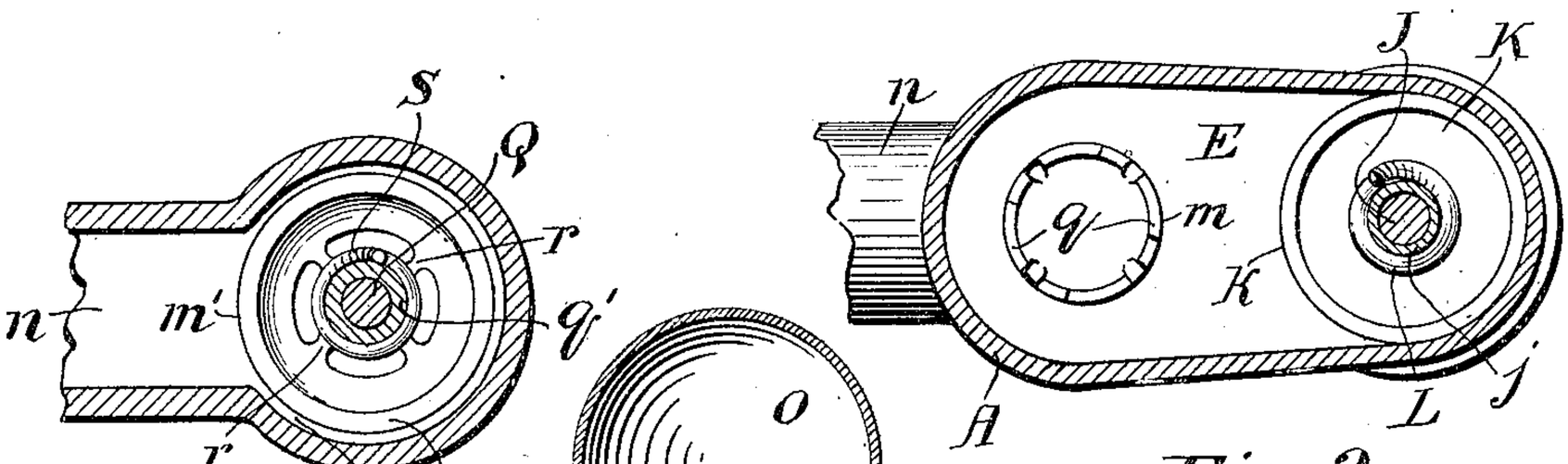

Fig. 4.

Fig. 2.

Fig. 1.

Fig. 3.

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PUMP.

999,405. Specification of Letters Patent. **Patented Aug. 1, 1911.**

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To all whom it may concern:

Be it known that I, ALBERT B. SHULTZ, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to a pump which is more particularly designed for circulating water in an explosion engine but which may also be used for other purposes.

It is one object of this invention to produce a pump for this purpose in which the cylinder, inlet and outlet chambers are formed integrally and compactly and still afford ready access to the valves for inspection, cleaning and repairs.

Further objects of this invention are to simplify the construction of the pump, reduce its cost of manufacture and avoid liability of getting out of order.

In the accompanying drawings consisting of 2 sheets; Figure 1 is a vertical section of my improved pump. Figs. 2 and 3 are horizontal sections of the same in line 2—3, Fig. 1, looking upwardly and downwardly, respectively. Fig. 4 is a horizontal section in line 4—4, Fig. 1, looking upwardly.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents the cylinder or barrel of the pump, B the plunger or piston which reciprocates therein and *a* the stuffing box between the lower or front end of the cylinder and the plunger. The reciprocating movement of the plunger is preferably effected by a rotatable shaft C arranged below the cylinder and at right angles thereto, an eccentric *c* mounted on the shaft, and a connecting rod D pivotally connected at its upper end with the plunger and provided at its lower end with a strap *d* which surrounds the eccentric. Projecting laterally from the upper or rear end of the cylinder and communicating with the latter is a water inlet chamber E which is provided in its bottom with an inlet passage or port *e* and a valve seat *f* around said port within the inlet chamber. Communicating with the lower end of said inlet port and projecting horizontally therefrom is an elbow-shaped inlet nozzle or pipe *g* by which water is conducted to the port *e*, chamber E and cylinder A.

H represents an inlet valve arranged within the inlet chamber and movable toward and from the seat *f*. This valve is guided by means of a plurality of wings *i* depending from its underside and engaging with the bore of the port *e*, and a stem J rising from the upper side of the inlet valve and sliding in a guideway *j* formed in the underside of a cap K which closes an opening *k* in the top of the water inlet chamber. The inlet valve may be normally held down on its seat by gravity but the closing movement of this valve is preferably aided by means of a spring L surrounding the valve stem and bearing at its upper end against the cap K while its lower end bears against the inlet valve. The opening *k* is sufficiently large to permit of passing the inlet valve through the same in assembling and dismembering the parts.

M represents a water outlet chamber arranged on top of the cylinder and provided with an outlet port *m* in its bottom forming the head of the cylinder, an opening m^1 in its top in line with the port *m* and a laterally extending discharge nozzle *n*.

For simplicity, strength and cheapness, the cylinder, the inlet and outlet chambers and the inlet and outlet nozzles are cast integrally in metal or otherwise constructed in one piece.

O represents an air compressing dome which is provided at its lower open end with an externally screw threaded flange o^1 which engages with an internal thread in the bore of the opening m^1.

P represents an outlet valve arranged in the outlet chamber and movable vertically toward and from a valve seat *p* around the upper end of the outlet port *m* and guided by means of wings *q* depending from the underside of this valve and engaging with the bore of the port *m* and a stem Q rising from the upper side of this valve and sliding in a guideway q^1 which is supported on the lower end of the dome by arms *r*. The outlet valve is yieldingly held in its closed position by gravity aided by a spring *s* surrounding the valve stem *q* and bearing at its upper end against the arms *r* and at its lower end against the outlet valve.

The opening m^1 is sufficiently large to permit the passage of the outlet valve in assembling and dismembering the parts.

By utilizing the lower end of the dome as a means for guiding the outlet valve and

also covering the opening through which this valve is introduced into the outlet chamber and removed therefrom, the construction of the pump is materially simplified, its cost is reduced and the same rendered very compact.

During each downward stroke of the plunger the inlet valve is lifted from its seat while the outlet valve is held on its seat, thereby causing water to be drawn from the inlet nozzle into the cylinder. During the upward stroke of the plunger the inlet valve is closed and the outlet valve opened, thereby causing the water to be delivered from the cylinder through the discharge nozzle. As the water is discharged from the cylinder the air is compressed in the dome, thereby equalizing the delivery of the water through the discharge nozzle.

I claim as my invention:

A pump comprising a cylinder having an inlet, and also having an outlet chamber provided with an outlet port on one side of said chamber which communicates with said cylinder, and said chamber being also provided with an opening in the opposite side of said chamber in line with said outlet port, an outlet valve for controlling the outlet port, and an air dome having its inlet screwed into said opening and provided with a guide for said valve.

Witness my hand this 8th day of February, 1910.

ALBERT B. SHULTZ.

Witnesses:
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