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VALVE AND AIR-CHEST OF DOUBLE CYLINDER-PUMP.

Specification of Letters Patent No. 5,728, dated August 22, 1848.

To all whom it may concern:

Be it known that I, HOMER PARMELEE, of Danville, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Pumps, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, which form a part of the same, in which—

Figure 1, is a front elevation. Fig. 2, is a plan of the base. Fig. 3, is a plan of the base showing valves. Fig. 4 is a section on line *x, x*, Fig. 2.

My invention consists in the mode of constructing the valve chamber which contains all the valves and the air chamber in double acting pumps in one, and entirely independent of the cylinders, so that the valves shall be easily come at and repaired without disturbing the cylinders or pipes, they being capped by the air chamber whereby a cheap and efficient pump is produced, which will answer all the purposes of a force and lifting pump, for domestic use, and can be readily employed for a fire engine, &c.

The construction is as follows: The two cylinders (*a, a,*) plungers (*b*) &c., are somewhat like those in ordinary double cylinder pumps; they are placed at convenient distance apart, and are connected at the top with a brace (*c*) which, by being extended up above their tops serves for a fulcrum to the pump brake (*d*); the lower ends of the cylinders are connected with an oblong base (*e*), that all the valve seats and waterways are situated in, they being so arranged as to be all on the same level, and covered with a single piece of leather, out of which the valves are formed; this base (*e*) is covered with a cap (*f*) that serves the double purpose of confining all the valves, and forming an air chamber for the induction and eduction pipes. The base (*e*) is cup-formed, and has a partition (*e'*) which divides it unequally into two. This partition is U-shaped, as clearly shown in red lines in Fig. 2. There is a plate cast upon the top of this base, with openings through it, as represented in Fig. 2; at the end where the induction pipe (*g*) (see Fig. 4,) is situated there are two oblong poles (*h, h,*) merely to form a connection with the air chamber

above; two smaller holes (*i, i,*) also open on the same side of the partition *e'* that serve as valve seats for the two induction valves (*i', i',*) and outside of them are two other openings (*k, k,*) that open into the waterways (*l, l,*) connecting with the cylinders; and on the opposite side of the partition (*e'*) to that where the holes *h* and *i* are situated as clearly appears in Fig. 2, the space on this latter-named side of partition (*e'*) is divided into three by two short partitions (*e'', e'',*), also shown in Fig. 2, by red lines; into the two outer spaces the last-named openings *k* in the top plate communicate; there are, besides these openings, two others (*m, m,*) connecting with the same chambers and forming the seats of the delivery valves *m'*; and between them there is a third, lettered (*n*), that communicates with the delivery pipe (*o*); a flat piece of leather (*p*) see Fig. 3, covers the whole surface of the plate, in which holes are cut over the opening at (*h, h,*); at (*k, k,*) and at (*n*) it is also cut, so as to form valves over (*i, i,*) and (*m, m,*). The valves over (*i, i,*) are the foot valves, and those over (*m, m,*) are delivery valves; those parts of the leather which are left between the openings and valves, as well as all around the outside, form a packing for the joint between the base and the air chamber (*q*), this air chamber or cap is divided into two unequal compartments (*q' q''*) by a partition (*r*) that fits on to the base at (*r'*). On the side of the largest compartment are two caps (*x'*) that fit closely over the foot valves and openings (*k, k*). The cap and air chambers thus formed is screwed to the seat or base by two screw bolts (*s*) that pass down through it, and screw into the top plate of the base; the base, with the cylinders and pipes, are firmly secured to the place they are to occupy, and are not required to be disturbed in renewing the valves or adjusting them, which simply requires the displacement of the cap or air chambers. The compartment (*q'*) is for the purpose of relieving the suction pipe; and the other (*q''*) is for the delivery pipe. The operation of the pump is similar to that of the ordinary double cylinder pump. The water rises through the pipe (*g*), enters the air chamber *q'*; thence under the partition (*r*) into the cap (*x'*) through the valve (*i'*) thence through (*k* and *l*) into the pump cylinder from which it is forced on the descent of the piston through the foot

valve (m') into the air chamber (q'') and thence to the delivery pipe (o); the arrows denote its course in Figs. 3 and 4.

Having thus fully described my improvements, what I claim therein as my invention, and desire to secure by Letters Patent, is—

The combination and arrangement of the valves, with the air chambers, substantially in the manner and for the purposes herein

above described and set forth; that is to say having the cap so constructed as to form the air chamber and confine the valves as specified.

H. PARMELEE.

Witnesses:

SIMON P. KASE,
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