W. F. Dodge,

Double-Acting Pump.

No. 47,193. Patented April 11, 1865.

Fig 1.

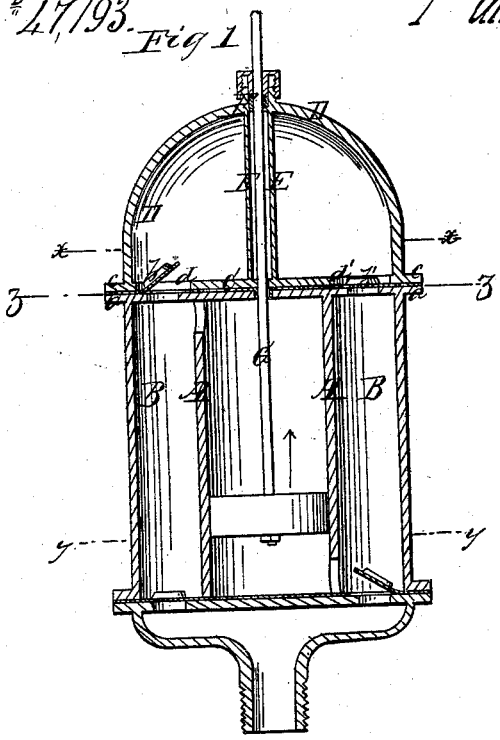


Fig 4.

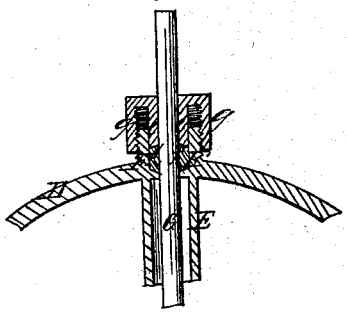


Fig 2.

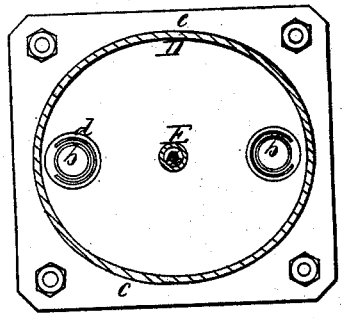
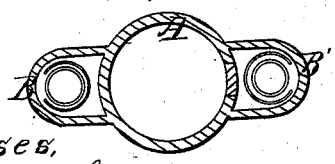


Fig 3.



Witnesses,
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WILLIAM FOSTER DODGE, OF NEW YORK, N. Y.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **47,193**, dated April 11, 1865.

To all whom it may concern:

Be it known that I, WILLIAM FOSTER DODGE, of the city, county, and State of New York, have invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central vertical section of a double-action pump with my improvements. Fig. 2 is a horizontal section of the same in the plane indicated by the line *x x* in Fig. 1. Fig. 3 is a horizontal section of the same in the plane indicated by the line *y y* in Fig. 1. Fig. 4 is a central vertical section of the stuffing-box on a larger scale than Figs. 1, 2, and 3.

Similar letters of reference indicate corresponding parts in the several figures.

The object of the first part of my invention is to simplify the construction of such pumps as are furnished with air-chambers and side pipes, and to this end it consists in constructing the cylinder-cover, the air-chamber, and the covers for the side pipes and valves all in one casting or piece, which is attached to the cylinder with a single joint of plane surface.

In the arrangement of the air-chamber of a pump directly over the cylinder so that the piston-rod passes through the air-chamber and through a stuffing-box on the top thereof there has heretofore been much difficulty in preventing leakage of air through the stuffing-box. To obviate this difficulty the second part of my invention consists in completely isolating the piston-rod and its stuffing-box from the air-chamber by means of a tube surrounding the said rod, and connecting the air-chamber with the cylinder-cover.

The third part of my invention consists in a new and improved construction of the gland or follower and the screw-cap of a stuffing-box, whereby great facility is afforded for the removal of the follower when necessary for the renewal of the packing or for any other purpose.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A is the cylinder, having cast with it the two side water-passages, B B′, which extend from top to bottom. These passages are surrounded at the top by the same flange *a* which surrounds the cylinder, and the whole upper end is faced in a lathe or planing-machine to one flat surface, which constitutes the upper valve-seats when flap-valves are used, and which forms the lower face of the single plane joint *z z*, by which the cylinder-cover C and the air-chamber D are secured to the cylinder. The cylinder-cover and air-chamber are formed in one casting, with a surrounding flange, *c*, by which to bolt them to the flange *a* of the cylinder, and the whole bottom of this casting, in which there are openings *d d′* over the passages B B′ to admit the valves *b b*, is faced flat in a lathe or planing-machine to form the upper face of the single plane joint *z z* of the cylinder-cover and air-chamber around the cylinder and side passages. The air-chamber is made large enough to cover the cylinder and both side passages, and hence to supply the place of covers to both side pipes and bonnets to both valves, and the single plane joint *z z* thus serves to connect the cylinder-cover, the air-chamber, and the cover of both side pipes and valves.

E is the tube which surrounds the piston-rod G, and isolates it and its stuffing-box F from the air-chamber. This tube is represented as cast with the cylinder-cover and air-chamber, between the centers of which it forms a connection. The stuffing-box F is at the top of this tube and is completely isolated from the air-chamber, so that no air can escape therefrom through it. The opening provided in the cylinder-cover at the bottom of this tube E is large enough for the piston-rod to pass loosely through it without friction, and will permit the said tube to be filled with water around the piston-rod by the upward stroke of the piston, thus forming a water stuffing-box between the cylinder and upper stuffing-box, F. The said tube, instead of being cast with the cylinder-cover and air-chamber, may be made separate, and screwed into them through the top of the air-chamber, and in such case the stuffing-box may be attached to the tube.

e is the follower or gland of the stuffing-box, fitted into the interior of the said box and pressing upon the packing *f*, contained therein, and *g* is the cap, having within it a fe-

male screw-thread, which screws onto a male screw-thread on the exterior of the stuffing-box. The follower or gland may be cast or otherwise formed of one piece of metal or made of two pieces, and rigidly connected by soldering, riveting, or any other suitable means, whereby the follower is withdrawn by the act of screwing off the cap.

I do not claim the attachment of a cylinder-cover, an air-chamber, and a side pipe-cover to the cylinder of a pump by two or more joints all in one plane; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The cylinder-cover C, the air-chamber D, and the covers for the two side pipes, when such parts are united with the cylinder A and side pipes by a single plane joint, substantially as described.

2. In combination with the air-chamber arranged directly over the cylinder, and with the stuffing-box on the top of the so-arranged air-chamber, the tube E, surrounding the piston-rod, connecting the top of the air-chamber with the cylinder cover, and isolating the piston-rod and stuffing-box from the air-chamber, substantially as and for the purpose herein specified.

WM. FOSTER DODGE.

Witnesses:

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