D. L. Furnam,

Double-Acting Pump,

No. 437. Patented Oct. 23, 1837.

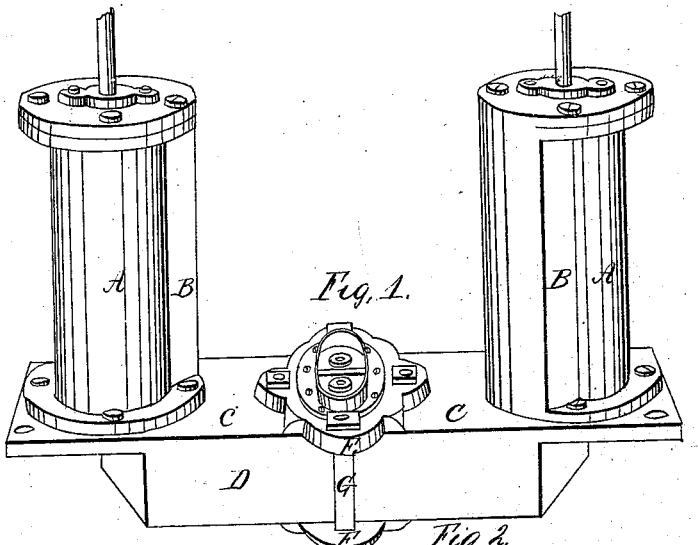

Fig. 1.

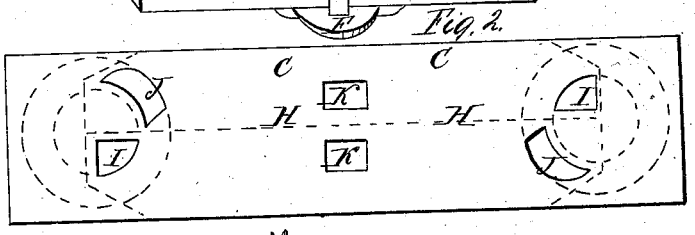

Fig. 2.

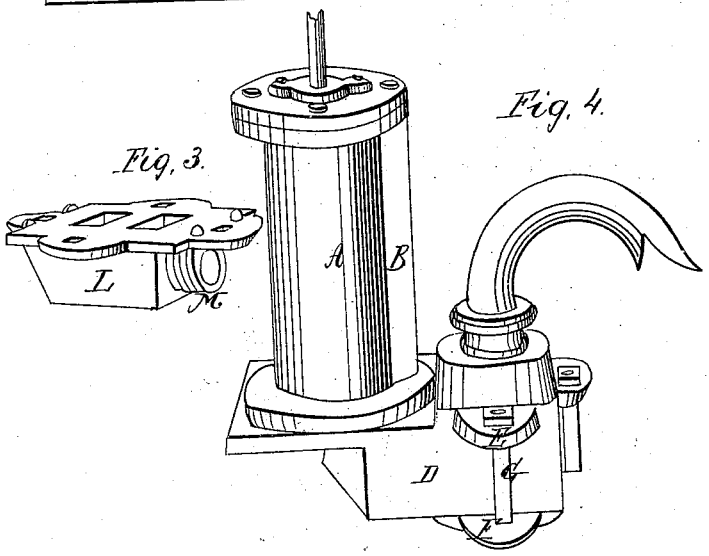

Fig. 3.

Fig. 4.

UNITED STATES PATENT OFFICE.

DUDLEY L. FARNAM, OF NEW YORK, N. Y.

DOUBLE-ACTING FORCE-PUMP.

Specification of Letters Patent No. 437, dated October 23, 1837.

To all whom it may concern:

Be it known that I, DUDLEY L. FARNAM, of the city of New York, State of New York, have invented certain Improvements in the mode of constructing double-acting pumps for the raising and forcing of water, by which they are better adapted than heretofore to ordinary use, to fire-engines, ships, &c., and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawing Figure 1 represents two double acting cylinders placed on one common bed, as they are arranged when employed for fire engines, or for other purposes to which it may be desirable to apply them. A A are two cylinders, and B B two side pipes with large openings to allow water to flow freely through them to the upper part of the cylinders. C is a bed plate upon which both the cylinders are firmly bolted. D is a chamber to receive water from the engine box, or other source it is usually cast in one piece with the bed C the upper valve seat E in which there are two valves opening upward, has an air vessel placed upon it, constructed as in fire engines generally, which therefore needs no description. F is a similar plate, or valve seat having like E two valves opening upward. These valve seat plates are secured together by screw bolts G so that by removing two nuts only, all the four valves used in this apparatus may at any time be repaired, cleaned, or adjusted, as may be required.

Fig. 2 shows the upper side of the bed plate C. The dotted line H H represents the situation of a partition which divides the water chamber D into two compartments along its whole extent, each compartment having an opening I into the cylinders, and an opening J into the side pipe of the other cylinder. Those marked K are under the valves of the air vessel. When a suction pipe is not used, the lower valves admit the water from the engine box into the chamber D; but when a suction pipe is required, the lower valve seat has an additional chamber L furnished with a suction pipe screw M Fig. 3.

For domestic purposes, I use one double acting cylinder only as in Fig. 4 with its side pipe, chamber D, and valve seat plates constructed and put together as above described with no other difference than which results from the using of a single cylinder.

Pumps of this construction are peculiarly adapted to ships, and other marine vessels on account of the facility with which the valve seats may be removed and the valves repaired; new ones if necessary, being in a few minutes substituted for such as may have failed. These must, of course, in this case, be coupling screws to the descending tubes of the pump, the manner of fixing and using which is familiar to every machinist.

It has been experimentally proved that the quantity of water thrown by an engine having double acting cylinders is greatly increased, the same power being exerted in both cases. This is, no doubt, in part due to the diminution of friction. The two pistons in the double cylinders producing the effect of four in those that are single acting; but from increased effect, it is believed that benefit results from other causes which it is not necessary here to investigate, but which are such as to constitute the use of them in this way a decided improvement.

What I claim as constituting my invention is—

The combination and employment of two double acting cylinders in fire engines, ship's pumps, and others, where the raising or forcing of a large quantity of water is desired, the apparatus being arranged and constructed substantially in the way herein set forth, and combined with the valve seat plates, with their valves attached, as above described, above and below the water chamber, whether two cylinders, or one only, be employed, and this mode of affixing the valve seats I claim whether said cylinder, or cylinders, be double, or single acting.

DUDLEY L. FARNAM.

Witnesses:

THOS. T. STEVENS,

JOHN T. DURYEE.