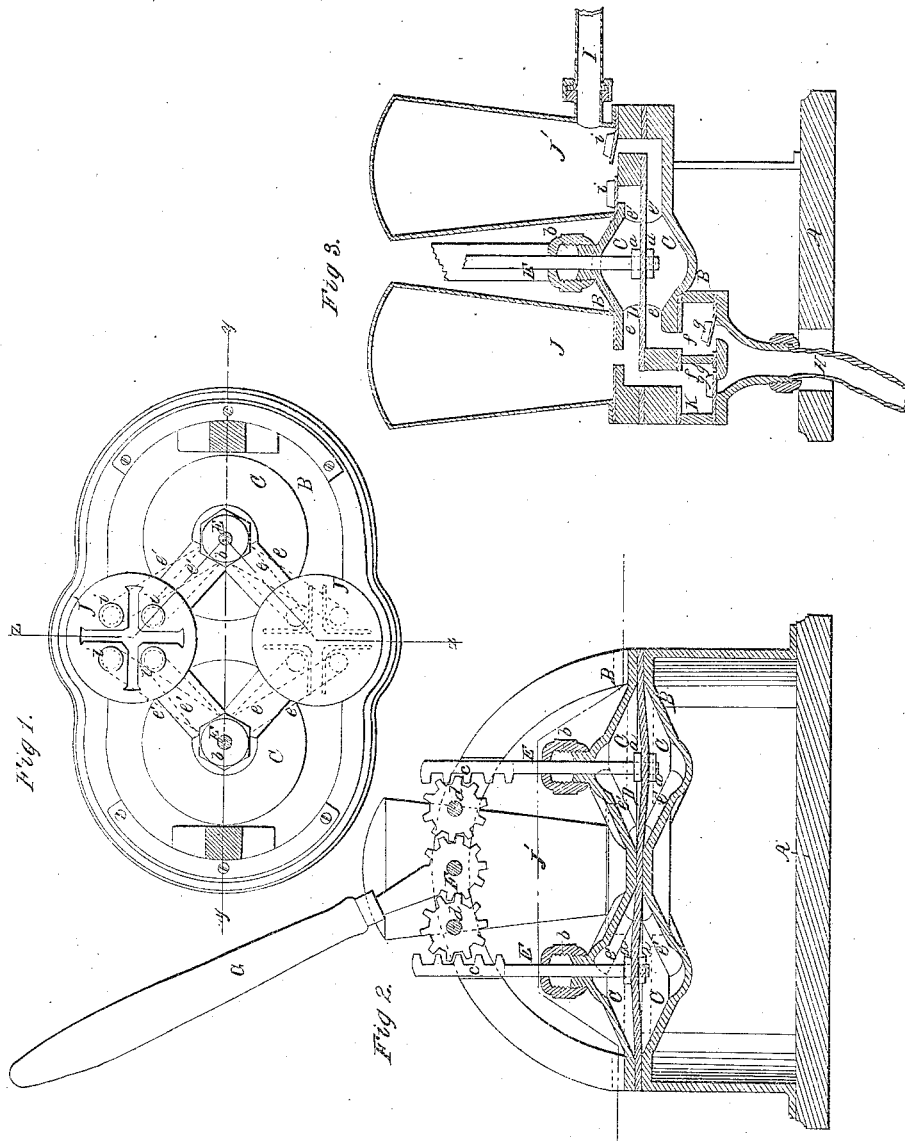


P. C. Rowe,

Double-Acting Pump,

No. 11,978,

Patented Nov. 8, 1864



Witnesses.

Wm. T. Trench

Inventor.

P. C. Rowe
per
Wm. T. Trench
att.

UNITED STATES PATENT OFFICE.

PHILIP C. ROWE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 44,978, dated November 8, 1864.

To all whom it may concern:

Be it known that I, PHILIP C. ROWE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a horizontal section of my invention taken in the line *x x*, Fig. 2; Fig. 2, a longitudinal vertical section of the same taken in the line *y y*, Fig. 1; Fig. 3, a transverse vertical section of the same taken in the line *z z*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved pump of that class in which a diaphragm of india-rubber or other suitable material is used as a piston or plunger, and which is double acting.

The invention consists in the employment or use of two chambers arranged with valves and diaphragms, the latter being operated in a novel way, and the chambers provided with air vessels, all arranged as hereinafter fully shown and described.

A represents a base-plate, on which the pump rests; and B B are two cast-iron plates, which have each two conical cavities, C, in them, which when the plates are secured together form the pump-chambers, as shown in Fig. 2. Between the two plates B B there is secured a diaphragm, D, which serves as the plungers or pistons of the chambers C C the diaphragm of each chamber having a rod, E, secured to it by nuts *a*, said rods passing up through stuffing-boxes *b* at the apices of the cavities of the upper plate, B, and each rod E having a rack, *c*, formed in it, into which pinions *d d* gear, said pinions gearing into a central toothed segment, F, having a handle, G, attached to it. By this arrangement the two diaphragms are worked alternately up and down by oscillating the handle G, as will be fully understood by referring to Fig. 2.

Each plate B is cast with two radial channels, *e e e' e'*, which serve as water-channels, and form a communication between the cham-

bers C C and the induction and eduction tubes H I, which communicate with air-vessels J J', the eduction-tube I communicating with the vessel J' and the induction-tube H communicating with the vessel J. (See Fig. 3.) Below the air-vessel J there is a valve-box, K, which is divided into four compartments, *f*, by partitions *g'*, each compartment having a valve at its bottom opening upward. The valves *g g* communicate with the channels *e e*, which lead from the induction tube.

The channels *e e e' e'* are not in line with each other, as will be seen by referring to Fig. 1, the channels in the lower plate, B, being indicated by dotted lines. By this means the passages of the two compartments in each chamber are made to communicate with their proper valves.

In the bottom of the air-vessel J' there are placed four valves, *i*, which communicate with the eduction passages or channels *e e*, which lead from the chambers C C to the air-vessel J', with which the eduction-tube communicates.

The operation of the pump will be readily understood. The piston-rods E E are raised and lowered alternately by oscillating the handle G, as previously referred to. As each diaphragm rises a suction is produced in the lower parts of the chambers C, and the valve *g*, which communicates with the induction-passage *e* of the lower part, opens, the water passing up into said part of the chamber, while the valve *g*, which communicates with the induction-passage of the upper part of the other chamber, opens and admits the water into said part, it being understood that the diaphragms of the two chambers move or work simultaneously in opposite directions. While the water is being drawn into one of the compartments of one chamber it is forced out from the other through its eduction-passage *e'* into the air-vessel J' and passes out through the tube I.

Thus it will be seen that each compartment C is double acting, and, as two compartments are used, a constant and uniform stream will be forced or ejected from the tube I.

The air-vessels perform their usual function and aid in causing the water to flow with a uniform volume or stream.

I do not claim the employment or use of an

elastic diaphragm for pumps, as they have been previously used; but

I do claim as new and desire to secure by Letters Patent—

The employment or use of the two chambers C C, elastic diaphragm D, in connection with the induction and eduction passages *e e'*, communicating with the induction and eduction

tubes H I, provided with valves *g i*, and all arranged to operate substantially as and for the purpose herein set forth.

PHILIP C. ROWE.

Witnesses:

J. P. HEALY,
JOHN JENNESS.