E. Lawrence,

Oscillating Pump.

No. 44,963. Patented Nov. 8, 1864.

Fig: 1.

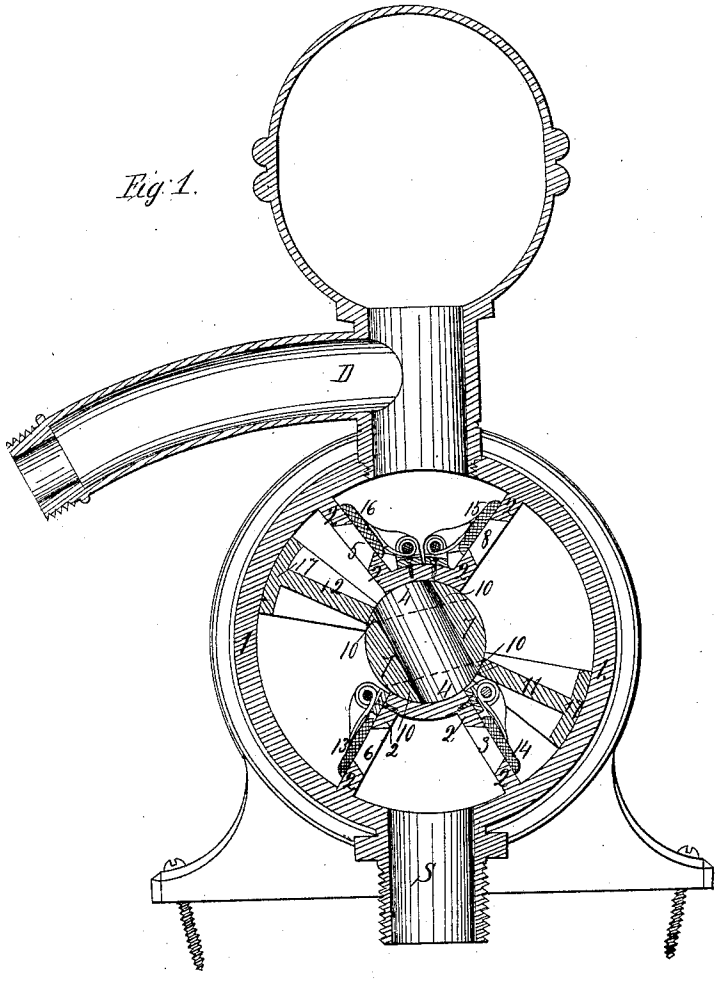
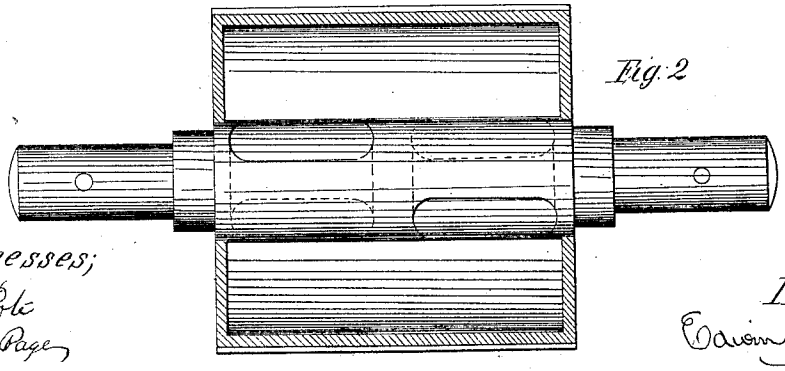


Fig: 2



Witnesses;
A. S. Pole
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Inventor;
Edwin Lawrence.

UNITED STATES PATENT OFFICE.

EDWIN LAWRENCE, OF ANTRIM, NEW HAMPSHIRE.

IMPROVEMENT IN PUMPS.

Specification forming par's of Letters Patent No. **44,963,** dated November 8, 1864.

To all whom it may concern:

Be it known that I, EDWIN LAWRENCE, of Antrim, in the county of Hillsborough and State of New Hampshire, have invented a new and Improved Apparatus for Raising and Forcing Water; and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists of a reciprocating quadruple-acting pump, having a single cylinder, with double partitions on the top and bottom thereof, with valves (four in number) placed upon them, with openings through the shaft, running diagonally in opposite directions, the piston to be placed or cast upon the shaft in the form of wings, extending across the whole diameter of the cylinder.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

I make my pumps of iron, brass, or other alloys.

The drawing represents an end view of the interi r of the pump.

The cylinder (marked 1) is usually made of equal diameter and length. The partitions (marked 2) are cast with or on to the cylinder, with openings through them, (marked 3, 5, 6, and 8.) The shaft (marked 10) and the arms or piston (marked 11 and 12) are cast together, (though the piston may be cast hollow in the center and the shaft be inserted,) and the piston has a rim or flange (marked 17) both on the ends and sides, to present more surface to the cylinder and thereby obviate the need of packing. The shaft is provided with openings (marked 4 and 7) running through it diagonally from the center outward, in opposite directions, and corresponding in area with the other inlets and outlets.

The valves (marked 13, 14, 15, and 16) are made of brass, vulcanized rubber, or other substances, and hung upon brass or composition wire.

The operation of the pump is as follows: When the piston 11 is raised, the water rises through the suction-pipe S, the valve-opening 3, the piston-opening 4, the valve-opening 5, and out through the discharge-opening D, while the simultaneous downward motion of the arm of the piston 12 forces the water beneath it through the piston-opening 7, the valve-opening 8, and out at the discharge-opening D. With the opposite motion of the piston reverse action follows.

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

The combination of the cylinder with the wings or piston with flanges, with the openings through the shaft, and the double partitions with openings through and valves upon them, as hereinbefore substantially set forth.

EDWIN LAWRENCE.

Witnesses:

MARY J. LAWRENCE,

ADALINE LAWRENCE.