J. W. Reid,

Oscillating Pump,

No. 41,091. Patented Jan. 5, 1864.

Fig: 1.

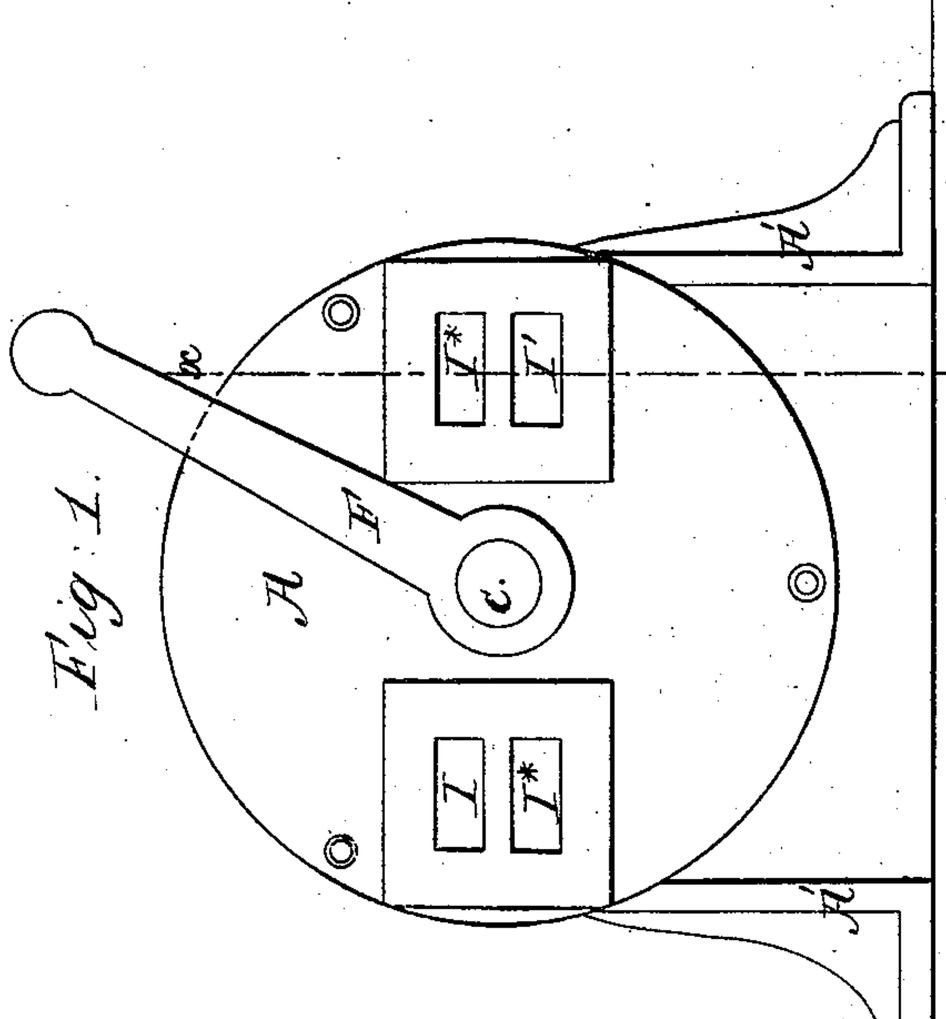


Fig: 2.

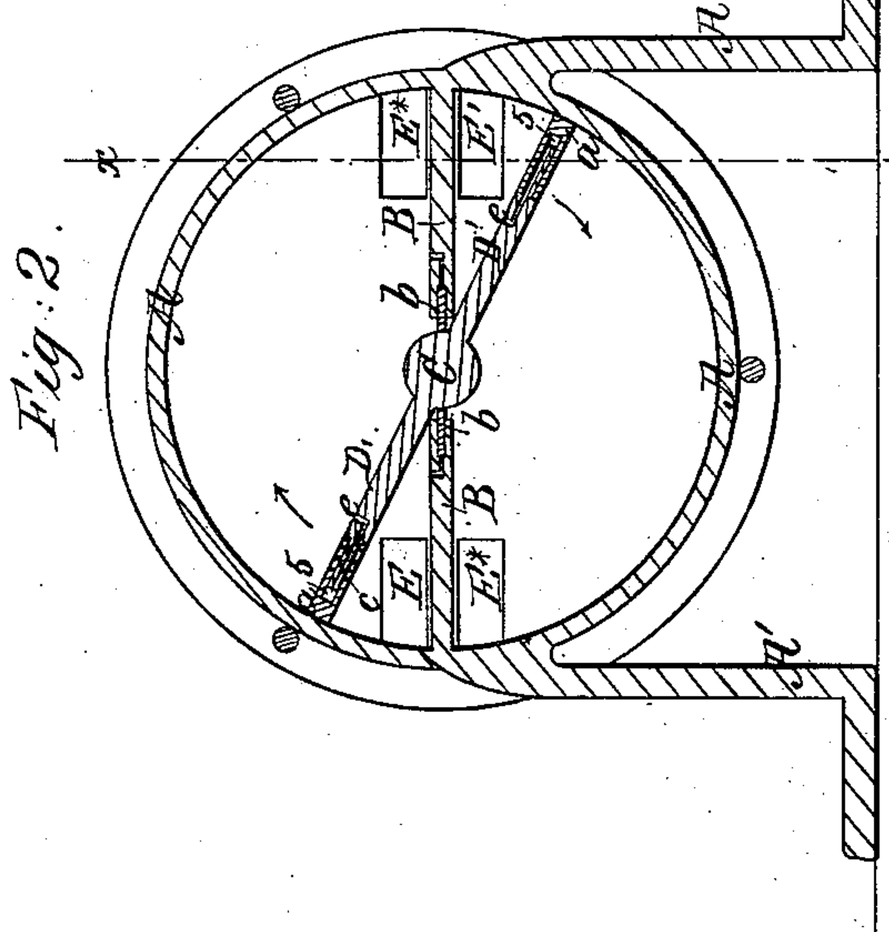


Fig: 3.

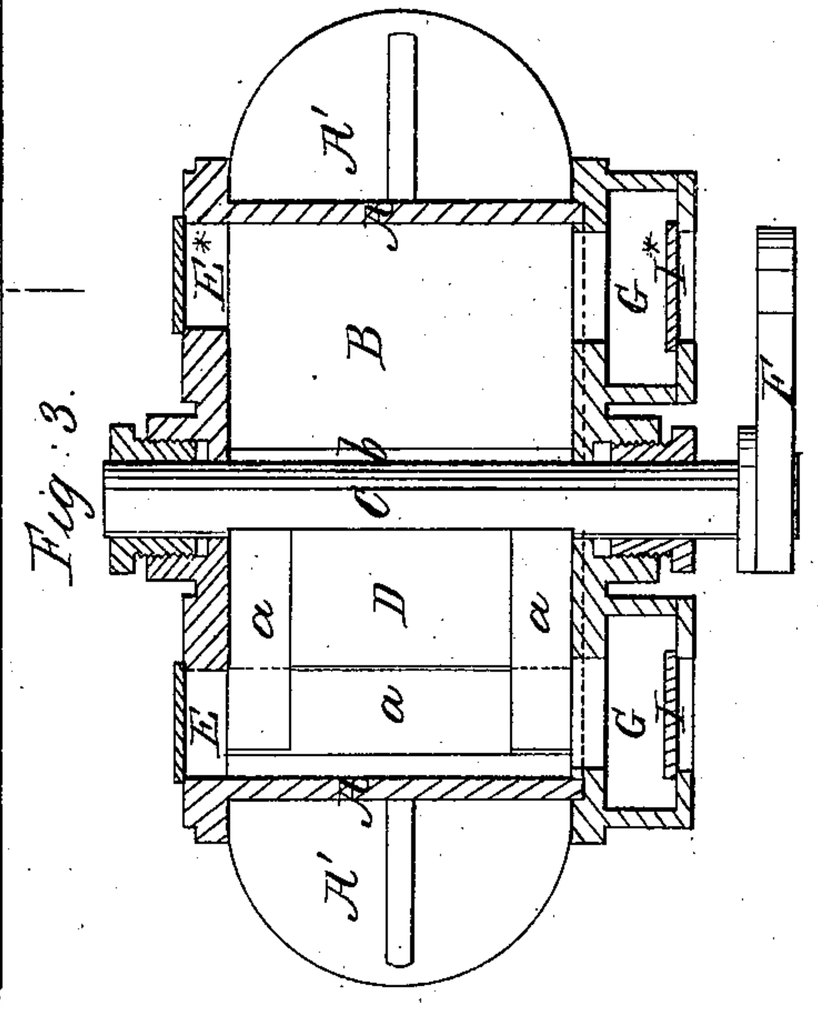
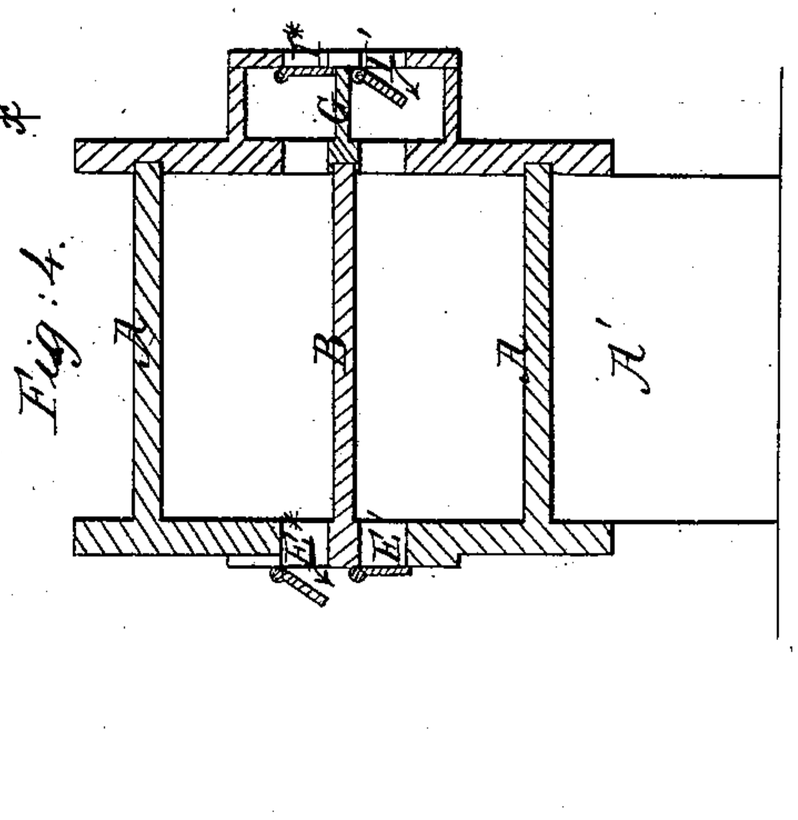


Fig: 4.



Witnesses;

Thos. H. Douglas

Geo. W. Reed

Inventor.

J. Wyatt Reid.

UNITED STATES PATENT OFFICE.

J. WYATT REID, OF NEW YORK, N. Y.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **41,091**, dated January 5, 1864.

To all whom it may concern:

Be it known that I, J. WYATT REID, of the city, county, and State of New York, have invented a new and improved engine, to be used as a motor, or as a pump, or for other purposes; 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 side view of the engine. Fig. 2 is a vertical section of the same, parallel with Fig. 1. Fig. 3 is a horizontal section of the same. Fig. 4 is a vertical section of the same at right angles to Figs. 1 and 2, in the plane indicated by the line *x x* in those figures.

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

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the accompanying drawings, which represent the engine in the form adapted for a pump or blower, that being the simplest form, owing to the valves being self-acting, or operated without connecting mechanism.

A is the cylinder, arranged horizontally and supported on a suitable base, A′. B B are two stationary radial abutments, secured within and extending from end to end of the cylinder, and from its periphery to the central shaft, C, to which they are packed with metallic or other suitable packing, *b*, as shown in Fig. 2. D D′ are the pistons, corresponding in number with the abutments B, attached firmly to the shaft C, and fitted to the heads and inner periphery of the cylinder with metallic or other suitable packing, *a*. The packing represented on the pistons is grooved, as shown at 5 5, to fit tongues *c c*, provided on the sides and ends of the pistons, and openings *e e* are provided on one or both sides of the said pistons to admit the steam, water, or other fluid to the grooves 5 5 for the purpose of pressing out the packing against the inner periphery and heads of the cylinder. A separate piece of such packing is used for each side and for the end of each piston, and the said recess being cut to form lap-joints at the corners to prevent the escape of the steam, water, or other fluid thereat. The shaft C passes through one or both cylinder-heads, and is kept tight therein by stuffing-boxes or other packing, and it is furnished outside of the cylinder by an arm, F, which may serve to transmit to the said shaft C an oscillating motion, obtained from a crank-shaft, or to transmit to a crank an oscillating motion obtained from the said shaft C, by the pressure of steam or other fluid upon opposite sides of it alternately, according as the engine is used as a pump or motor.

I I* I′* I′ are induction and E E* E′ E′* eduction valves, the latter being all applied to one cylinder-head and the former all to the other cylinder-head—one of each above and one below each abutment—making four valves in each head. The valves shown are of the flap kind, those being well adapted for a pump. The induction-valves, opening inward, are hinged to the inside of boxes G G, attached to the cylinder-heads, as in opening they must be kept clear of the pistons, but the eduction-valves, which open outward, are hinged directly to the outside of the cylinder-head. When the pistons move in the direction of the arrows shown in Fig. 2, the upper induction-valve, I, and lower one, I′, are open, and the other two induction-valves closed, and the upper eduction-valve, E*, and lower one, E′*, will be open and the other two closed, and the water or other fluid enters through I I′ and follows the pistons, and is expelled before the pistons through the valves E* E′*. When the pistons move in the opposite direction, the valves which have been above described as open will be closed, and the other four will be open.

In operating the engine as a pump by applying power to the arm E, an oscillating motion is given to the shaft and pistons to the extent of nearly half a revolution—that is to say, as far as the movement of the pistons is permitted by the abutments—and by this movement in either direction a vacuum is caused behind the pistons, and the induction-valves are opened by the pressure of the atmosphere to admit the fluid, while at the same time the pressure produced by the pistons upon the fluid in front of them, which was admitted to the cylinder during their previous movement in the opposite direction, forces open the eduction-valves.

To operate the engine as a motor, the valves require to have the same movement relatively to the pistons as before described with refer-

ence to the drawings, but they must be opened and closed by suitable mechanism, deriving motion either directly or indirectly from the shaft, and the pressure of the fluid admitted by the induction-valves acts upon the pistons to produce the movement of the latter, while the fluid in the cylinder is exhausted or escapes through the eduction-valves.

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

The combination of the quadruple induction-valves I I′ I* I′* and the quadruple eduction-valves E E′ E* E′* with the abutments B, oscillating pistons D D′, shaft C, and cylinder A, in the manner herein shown and described.

J. WYATT REID.

Witnesses:
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