W. Race,

Oscillating Pump,

No. 18,705. Patented Nov. 24, 1857.

Fig. 1.

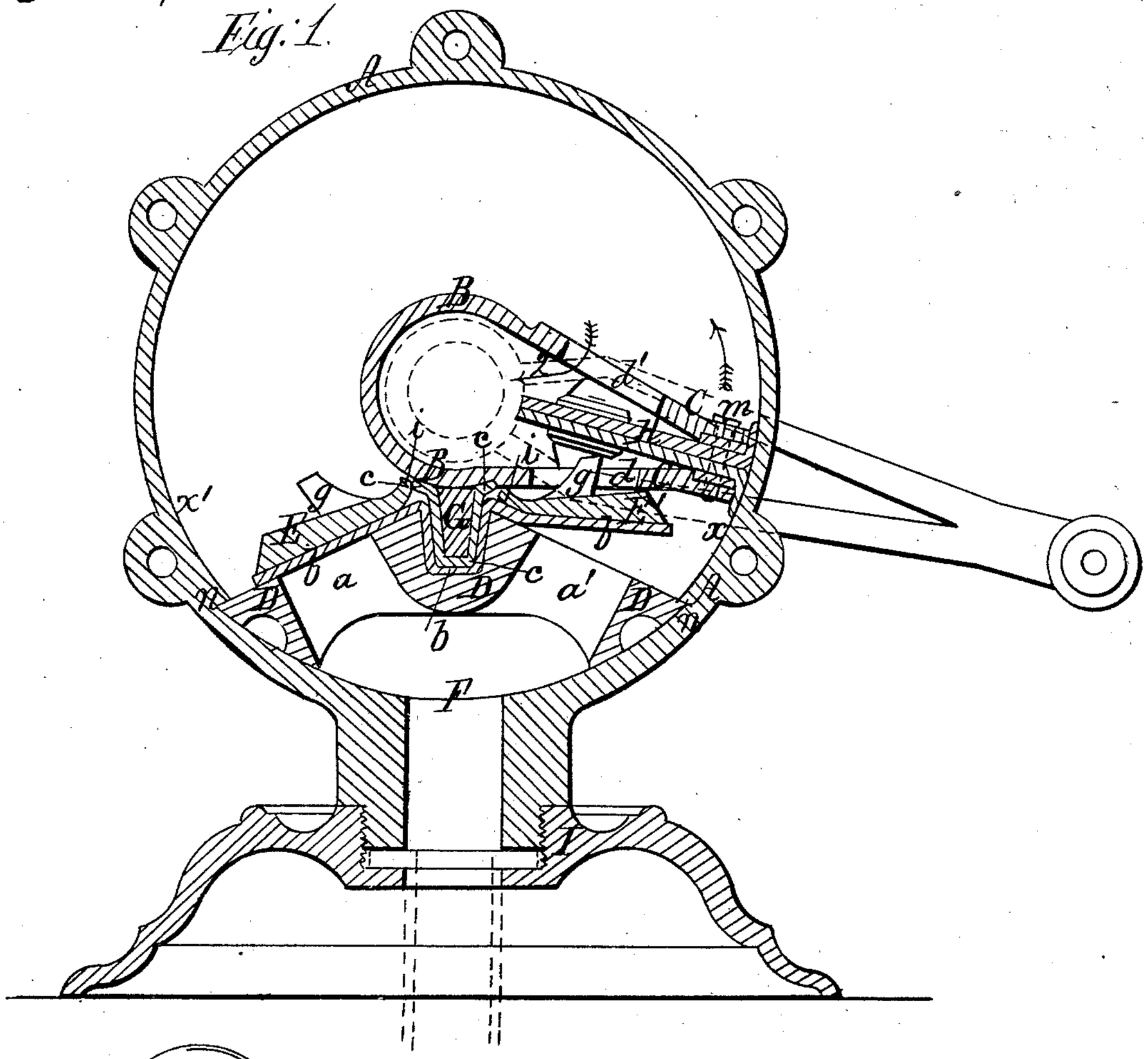
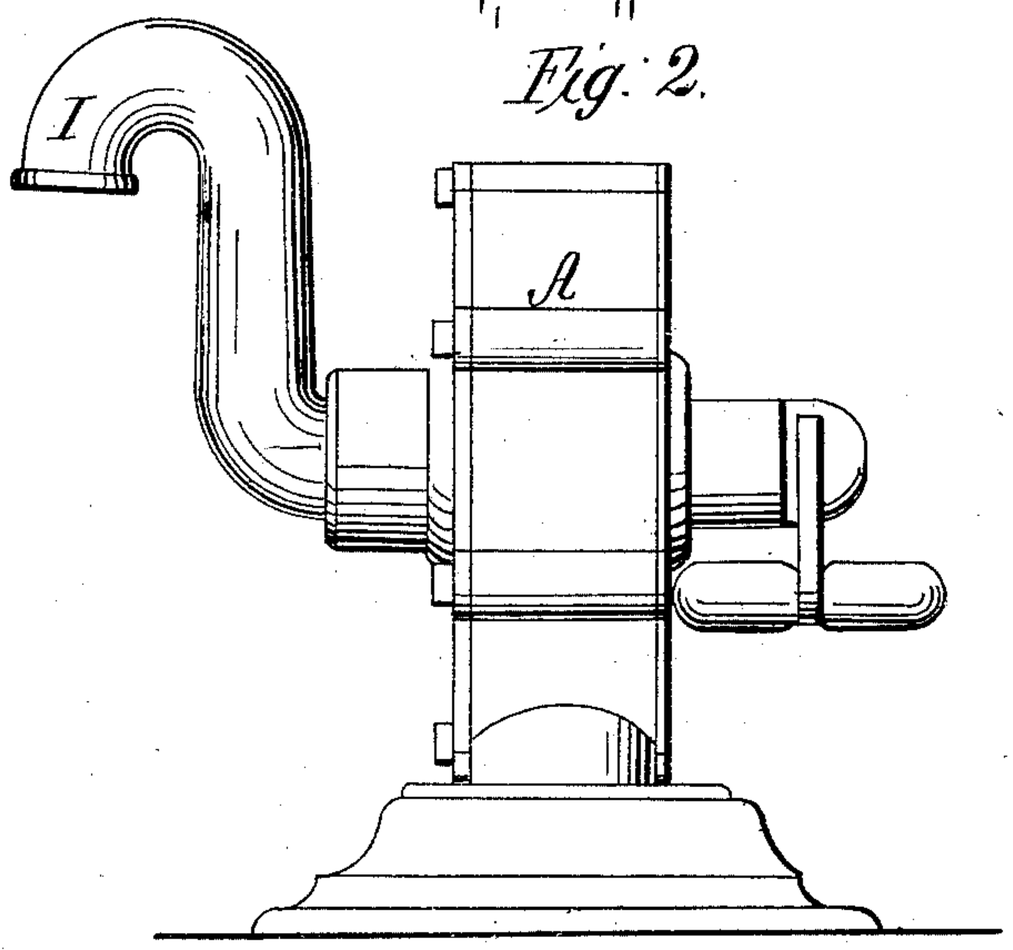


Fig. 2.



UNITED STATES PATENT OFFICE.

WASHBURN RACE, OF SENECA FALLS, NEW YORK.

PUMP-PACKING.

Specification of Letters Patent No. 18,705, dated November 24, 1857.

To all whom it may concern:

Be it known that I, WASHBURN RACE, of Seneca Falls, in the county of Seneca and State of New York, have invented a new and useful Improvement 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 annexed drawings, in which—

Figure 1, is a side sectional elevation of my improved pump. Fig. 2, is an end elevation of the same.

Similar letters of reference indicate the same parts in both figures.

This invention relates to that description of pumps in which an oscillating or rocking piston is employed, the water being discharged through the central shaft which is hollow.

My improvement consists in causing the wedge piece which holds the two lower valves in place, to serve also as a packing for the oscillating shaft.

The construction and operation of my pump is as follows:—

A, is a cylindrical shell, through the center of which a hollow shaft B passes; said shaft being so fitted as to oscillate.

C, is a hollow piston attached to and forming a part of shaft B. The extremity of the piston C (packed as will shortly appear) nearly touches the inner periphery of shell A, and when shaft B is oscillated, the piston C sweeps the shell A from x to x^1.

D, is a permanent valve seat upon which the flat valves E, E^1, rest; (a, a^1) being the openings of the valves.

F, is the induction port communicating with the valve openings (a, a^1,).

(b) is a leather hinge or flap, to which the valves E, E^1, are attached. The middle of flap (b) enters a cavity in the center of seat D, and is there secured by a wedge-shaped block of wood G; an additional packing or strip of leather (c) being interposed between the wedge G and flap (b); said leather (c) and flap (b) being forced into the cavity of the wedge. The under side of the shaft B touches the top of the wedge-piece G, which thus forms a packing for the oscillating shaft B. The wedge-piece G is of the same length as the width of the interior of the shell A. The wedge-piece G is thus made to perform the double function of packing the oscillating shaft B, and keeping the flaps (b) with their valves E, E^1, in place. Several important advantages arise from this arrangement. Both the wedge G, and leathers (b, c,) swell slightly when moistened. This swelling tends to press the wedge-piece tightly up against the shaft B, but the pressure is elastic to a certain extent, owing to the yielding nature of the materials. The ends of strip (c) are also projected up against shaft B, and assist as a packing against said shaft.

H, is a pendulous valve, suspended from the extremity of piston C, and extending down through the central part thereof. The valve H swings alternately against the inner surfaces of piston B, and thus alternately opens and closes the apertures (d, d^1). The outer ends of the leather composing the valve H touch the shell A and serve as a packing for piston C, being kept in place by screw bolt (m) which passes through the extremity of piston C and valve H, as shown.

When the piston C is moved in the direction of the arrow 1, the resistance of the water above the piston presses down the valve H, so that it closes the aperture (d), leaving the aperture (d^1) open. The water above or in front of the piston C also closes valve E, and is therefore forced to make its exit through aperture (d^1) to the interior of piston C and into shaft B (as indicated by arrow 2) whence it emerges through nozzle I, the latter being attached to one side of shell A.

The advance of the piston C, in direction of arrow 1, produces a vacuum behind said piston, which opens valve E^1, and inducts the water through the opening (a^1).

When piston C is reversed, the valve H is thrown over upon the opposite side of the piston, closes aperture (d^1) and opens (d). The water just inducted then closes valve E^1, and escapes in the manner before described into the shaft B and through the nozzle I; valve E being opened, and a new supply of water admitted through passage (a), meantime, by the vacuum produced by the change in the direction of the piston C.

The tripping of the valves, in order to permit all the water to escape, when desired, is done in the following manner:—Upon each of the valves E, E^1, is a projection or pin (g, g,) and the back end of valves E, E^1, is turned up a little, so as to form projections (i, i). If the piston C be made to oscillate sufficiently far, its lower side, at the

ends of such movement, will come in contact with one of the projections (*i*, *i*,) seen in Fig. 1, and valve E¹ will be tripped or lifted; and the projection or pin (*g*) will pass through the opening (*d*) in the piston C, and strike against the valve H, and trip or lift that also. Fig. 1 shows the position of both valves when thus tripped. If the piston is thrown over upon the opposite side, valve E and valve H will be tripped together in the same manner. All water within the pump will thus escape. The tripping of both valves E, H, is necessary to free the pump of water; as the tripping of the lower valve E alone does not allow the air to pass in; consequently, unless both are tripped, the whole case or cylinder will remain full of water. But if the air could get in if valve H were not tripped, there would always remain a quantity of water within the hollow piston C, equal in amount to the size or capacity of the interior of said piston.

I, as a standard, upon which the shell A is supported. The shell A is notched at (*n*, *n*,) in order to receive the edges of the seat D, which is thus kept securely in place.

I do not claim to be the first inventor of pumps having a hollow shaft and hollow oscillating piston. Nor do I claim tripping the valves E, E¹, by means of the oscillating piston C. But to the best of my knowledge and belief, it is a new feature in pumps of this description to cause a wedge-piece to hold the lower valves in place and serve also as packing for the oscillating shaft. It is also a new feature to cause the lower valves to trip the pendulous valve.

Therefore I claim as new in oscillating, pendulous-valved pumps, and desire to secure by Letters Patent,—

Causing the wedge-piece G, which holds the two lower valves E, E¹, and piece (*c*) in place, to serve also, in combination with said piece (*c*), as a packing for the oscillating shaft B, as described.

WASHBURN RACE.

Witnesses:

L. R. C. MATHEWS,

A. FAILING.