N. Barrett,

Double-Acting Pump,

No. 32,607. Patented June 25, 1861

Fig. 1.

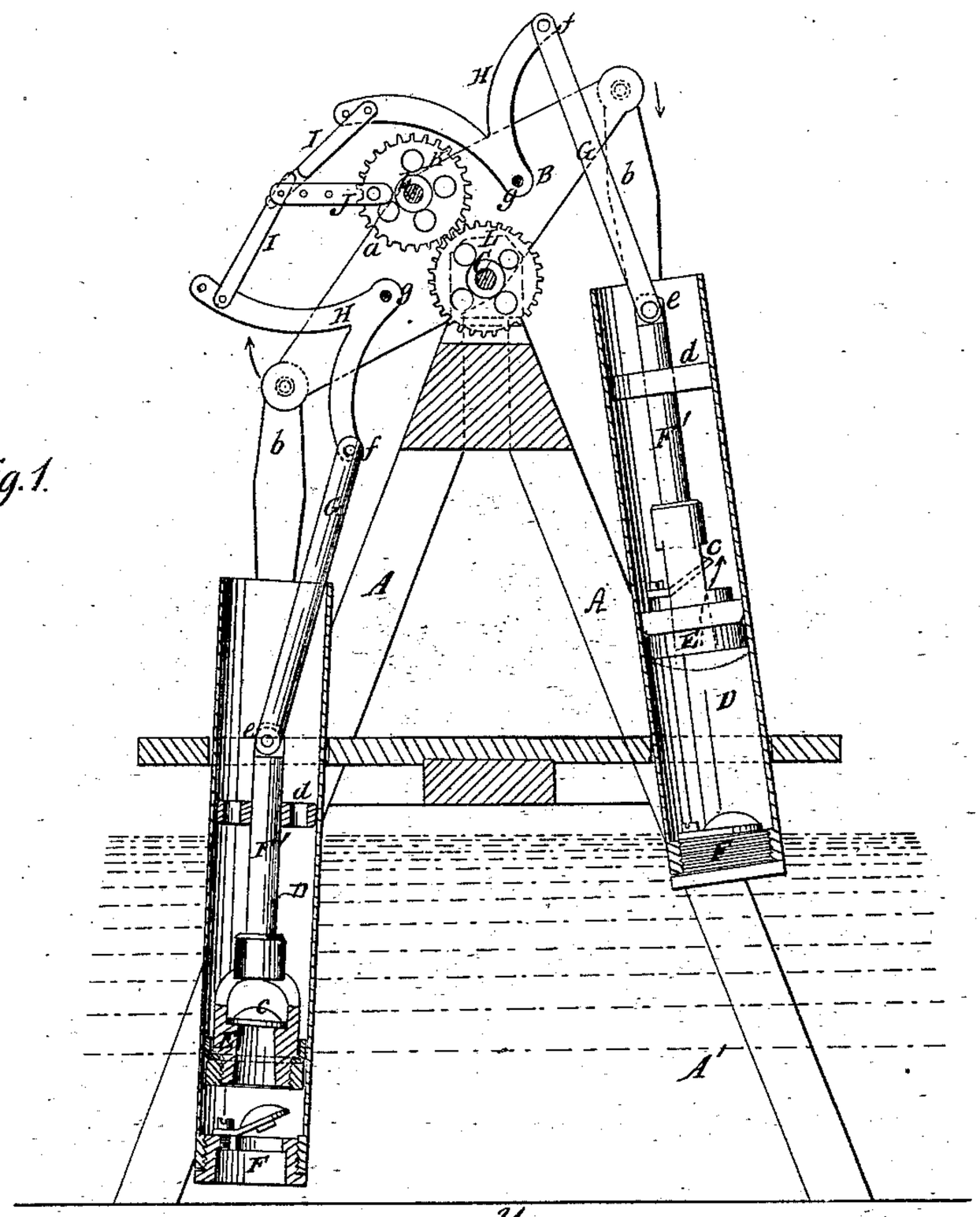
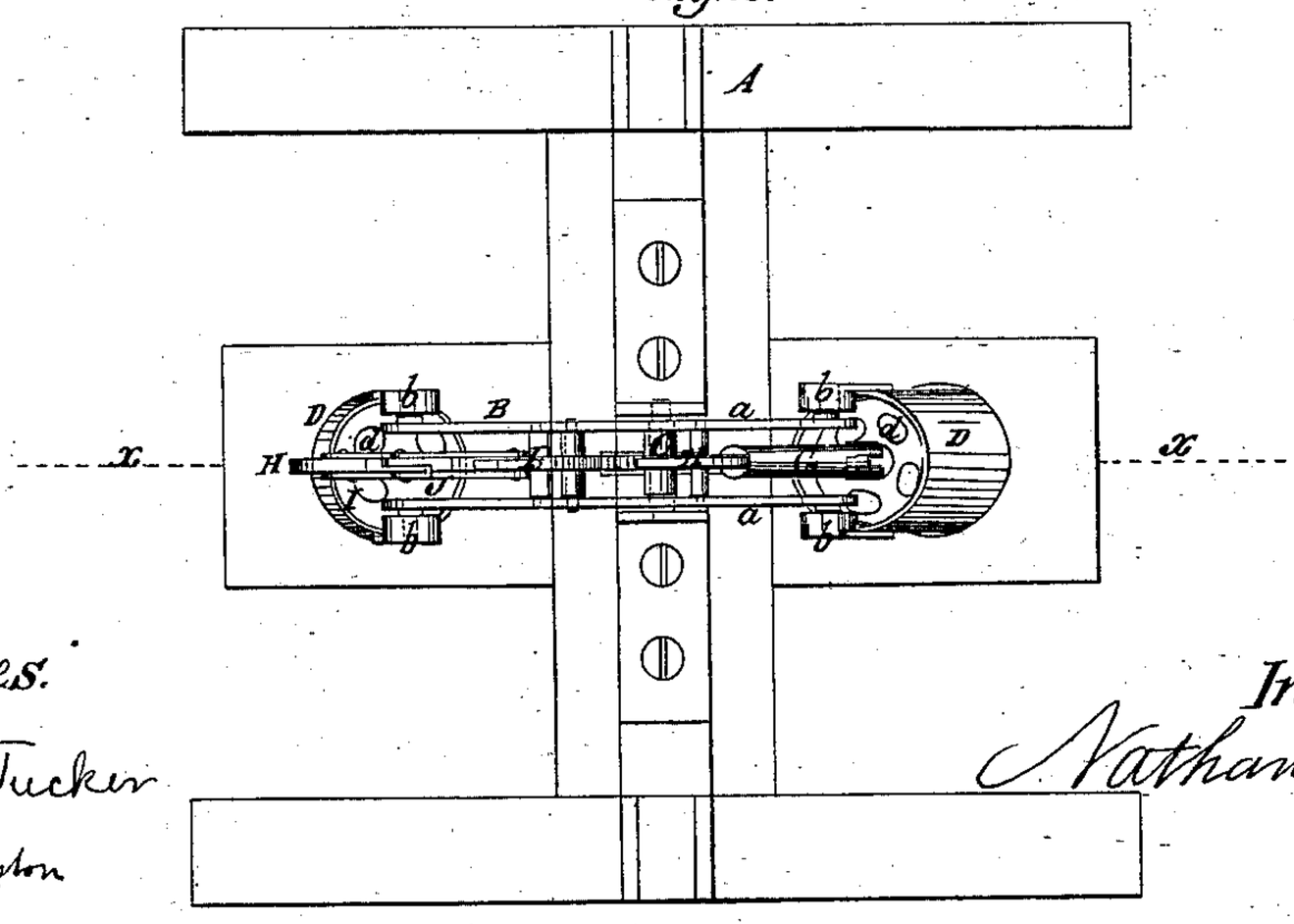


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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PUMP.

Specification of Letters Patent No. 32,607, dated June 25, 1861.

To all whom it may concern:

Be it known that I, NATHAN BARRETT, of the city, county, and State of New York, have invented a new and Improved Pump; 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, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention taken in the line *x*, *x*, Fig. 2; and Fig. 2 is a plan or top view of the same.

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

The object of this invention is to obtain a pump, which in its operation will lift only the amount of water it discharges, the weight of the whole column of water which is lifted in the ordinary lift pumps being avoided. To this end I employ two pump cylinders, which are connected to the ends of a walking-beam, and connect the piston rods by suitable gearing and levers, one cylinder being made to balance the other, and the whole arranged substantially as hereinafter described, whereby the desired end is obtained.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A represents a suitable framing, in the upper part of which a walking-beam B, is placed on a stationary shaft C, the beam B, being allowed to work freely on said shaft. The walking-beam B, is formed of two plates *a*, *a*, and they are connected at their ends by links *b*, *b*, to cylinders D, D, which pass down into the well or reservoir A′, from which the water is to be raised. Each cylinder D, is provided with a piston E, having a valve *c*, opening upward and at the bottom of each cylinder D there is secured a valve F, opening upward. The upper parts of the piston rods F′, have guides *d*, placed on them, which are allowed to work freely in the cylinders, and to the upper end of each piston rod F, there is attached by a pin *e*, a rod G. The upper ends of the rods G, are connected by pivots or pins *f*, to bent or V-shaped levers H, H, which are fitted in the walking-beam or rather between the plates *a*, *a*, thereof, and are allowed to work freely on their fulcra *g*, *g*. The upper ends of the levers H, H, are connected by links I, I, to a bar J, which is attached to a toothed wheel K, placed centrally on a shaft *h*, in the upper part of the walking-beam B. The wheel K, gears into a stationary wheel L, which is permanently attached to shaft C.

From the above description it will be seen that by vibrating or oscillating the walking-beam B, the cylinders D, will be alternately raised and lowered, and the pistons E, will be worked up and down within the cylinders D, D, motion being communicated to them from the walking-beam through the medium of the gearing and levers, the pistons rising as the cylinders rise and also descending with them. The water is drawn up into the cylinders D, and discharged from their upper ends by the motion of the pistons. The cylinders with their respective parts are counterpoised on the shaft of the walking-beam and therefore when the pump is at work, the rising cylinder exceeds in weight the descending one—an amount due to a column of water equal to the length of the stroke of the piston, for it will be understood that the descending cylinder contains all the water it held in ascending, with the exception of the portion discharged by the upward movement of its piston. The descending cylinder D, however, gradually increases in leverage power owing to the point of connection of the ascending cylinder with the walking-beam gradually approaching the fulcrum of the walking-beam. This increasing leverage of the descending cylinder D, greatly facilitates the operation of the pump. The friction attending the operation of the parts will not be great. The pistons E, work the same as those of ordinary lift pumps, and the levers and gearing cannot create much friction. The power for operating the pump may be applied to the walking beam B, in any suitable way.

Instead of the wheels K, L, segments may be used, as a portion only of said wheels works in contact during the oscillations of the walking-beam.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

The two pump cylinders D, D, attached to the ends of a walking-beam B, counterpoised thereon, and having their piston rods F′, connected by levers and gearing or segments in such a manner that the pistons will be operated automatically by the oscillating of the beam B, and all arranged to operate as and for the purpose set forth.

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