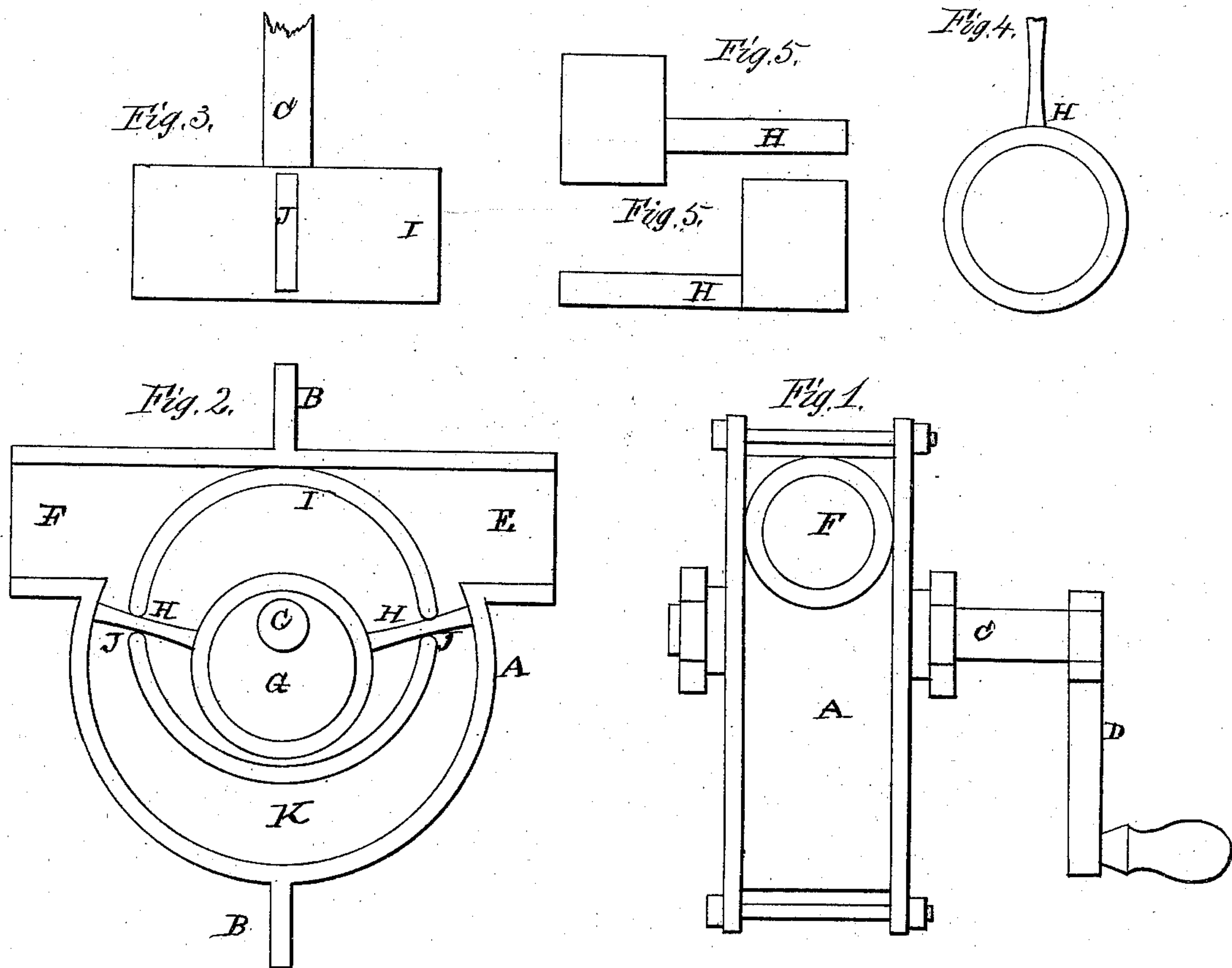


C. L. Johnson,
Rotary Pump,
No 32,029. *Patented Apr. 9, 1861.*



Witnesses
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UNITED STATES PATENT OFFICE.

CHESTER L. JOHNSON, OF LITTLE FALLS, NEW YORK, ASSIGNOR TO ALLEN M. COLVER.

ROTARY PUMP.

Specification of Letters Patent No. 32,029, dated April 9, 1861.

To all whom it may concern:

Be it known that I, CHESTER L. JOHNSON, of Little Falls, county of Herkimer, and State of New York, have invented certain new and useful Improvements in Rotary Pumps; and I hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

The nature of my said invention consists in peculiar shaped pistons or wings combined with a cylinder eccentric to, but within the pump case, in such a manner that the said pistons passing through slots in the inner cylinder are tight within said slots but do not bind therein whether the said pistons in their movement are on the radial lines of the said inner cylinder or oblique thereto in consequence of the eccentric action of said inner cylinder.

To enable others or those skilled in making pumps to construct and use my invention I will now proceed to describe its construction and operation.

Figure 1 of the drawings is a top plan or top view. Fig. 2 is a transverse sectional elevation cut through the periphery of the chest to show the arrangement of the hub valves and cylinder. Fig. 3 is an edge view of the periphery of the cylinder to show the form and direction of the slots. Fig. 4 is an end view of the valves and its collar, and Fig. 5 is a side view of the same.

The same kind of letters indicate the same parts in all the figures.

A, is the pump chest, or box, and is constructed in a cylindrical form.

B, B, are arms or supports projecting from the chest through which it is bolted to the platform or frame work on which it is to be operated.

C, is the driving shaft, having on it the crank D by which it is to be revolved. The shaft may also however be driven by a belt and pulley, or gear work as circumstances and its varied uses may require.

E, is the induction or receiving tube, or pipe through which the air, or water chamber K, is supplied.

F, is the eduction, or exit tube, or pipe through which the air or water is ejected or discharged.

G, is a stationary hub, or standard erected exactly over the center of the inside of one head of the chest. It is large in diameter to admit a hole through on one side of its center for the shaft that carries the cylinder to work in, and is long enough to reach to the head of the cylinder.

H, H, are the valves or fans with collars or rings embodied therewith, and placed over the hub G, which is their center of motion. They fit closely to the heads and periphery of the chest so that by every revolution they make around the hub, they sweep and clear the chamber K. The sides of the valves, or fans, are slightly curved so as to make the out ends and the ends, or parts where they join or connect with the collars thicker.

I, is a hollow cylinder open at one end however, but with a strong head at the other through the center of which the shaft C is inserted and fastened. On the inside of this head is a short hub or rim embodied around the hole that the shaft goes through to make a deeper bearing, so that it may be more strongly and permanently fastened to the shaft. The rim or periphery of the cylinder is deeper or wider than necessary to fill the space between the heads of the chest and one head has a groove in it for the open end of the cylinder to turn in. This is so made to leave a rim or projection outside of the slots J, J, to support the rim and make guides or bearing places for the valves to wear against; although it may answer perhaps just as well to leave this projection or larger width off, and let the valves bear against the head.

J, J, are the slots through the periphery of the cylinder by which the valves are carried around the hub. They are made the thickness of the head beneath the end embodied therewith which makes the head of the chest require a recess in it to go over this thickness of the head of the cylinder so that the other part of the head may fit as closely to the valves as practicable for them to work. It will be seen from the drawing Fig. 2 that the periphery of the cylinder is placed in close proximity to the interior periphery of the chest, thereby forming a partition between the induction and eduction tubes E, and F; and forming also the new moon shaped air and water chamber K. There are no eccentric parts in this pump nor are there any eccentric movements. The

valves act around a common center, which keeps the out ends or fans in a constant radial position with the periphery and center of the chest. But the cylinder turning on another center and carrying in its slots the valves which turn on a different center, produces a vibration of the valves in the slots which also produces an irregularity that has to be met or remedied by valves with thicker ends and curved sides as shown at H, H, Fig. 4.

It will be seen by rotating the cylinder that the valves will be carried over the mouths of the tubes E, and F, and thereby perform the office of a cut off. When a valve passes over the mouth of the tube E, in the direction of the arrow (which is the proper way to drive it,) the air or water will be carried past said tube, and be discharged through the tube F. By this operation a vacuum will be produced behind the valve which will be supplied immediately from without through the tube E, which will again be swept past and discharged, and so on alternately by the two valves. It may be necessary and especially after the holes through the heads in which the shaft turns become worn, that packing boxes should be attached to the heads over these holes to prevent the ingress of air or water into or out of the chest.

This pump will act as a suction or exhaust pump to raise water out of wells, or out of the holds of vessels &c. It will also act as a force pump for the purpose of irrigating

gardens extinguishing fires and for many other uses unnecessary to mention here.

This I believe fully describes the construction and mode of using this pump.

I do not claim a rotary pump having a series of pistons or wings passing through slots in a cylinder revolving within and eccentric to the main cylinder; but I do not know of any previous instance in which the pistons or wings have been made with curved sides thinner in the middle in order that said pistons may set tightly in the slots through the cylinder and not bind therein when at an angle to the radius of said cylinder, for in passing around, the pistons when fully projected or retracted are on the line of the radius of the cylinder I, but at the intermediate parts said pistons stand more or less angularly to said radius hence said pistons are made thinner in the center as represented to prevent jamming or binding when partially crosswise of said openings.

What I claim and desire to secure by Letters Patent is—

The pistons H, H, passing through the cylinder I, and revolving around a center (G) in the manner specified when said pistons H, H, are formed thinner in the middle and with the curved sides for the purposes and as specified.

CHESTER L. JOHNSON. [L. s.]

Witnesses:

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MORTIMER C. HEATH.