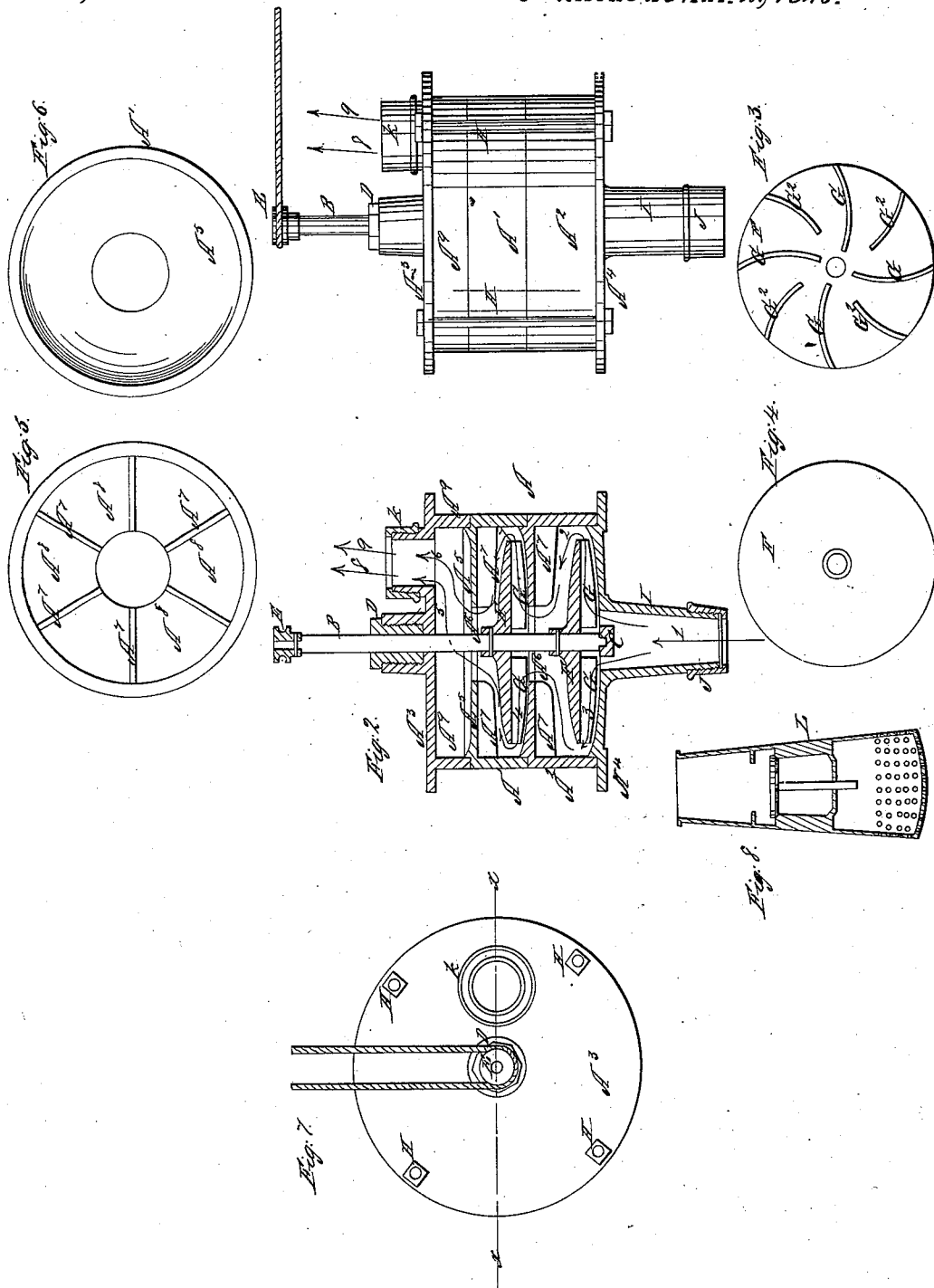


W. H. Johnson,
Centrifugal Pump.

N^o 4426.

Patented Mar. 21, 1846.



UNITED STATES PATENT OFFICE.

WILLIS H. JOHNSON, OF SPRINGFIELD, ILLINOIS.

ROTARY PUMP.

Specification of Letters Patent No. 4,426, dated March 21, 1846.

To all whom it may concern:

Be it known that I, WILLIS H. JOHNSON, of Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Engine for Raising Water by Centrifugal Force, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a side elevation. Fig. 2 is a vertical section on the line *x x* of Fig. 7. Fig. 3 is a view of the under side of the revolving plate containing the segment lifting paddles. Fig. 4 is a view of the top of the same. Fig. 5 is a view of the under side of the ring plate containing the radial partitions forming the water chambers. Fig. 6 is a view of the top or under side of the same. Fig. 7 is a plan or top view of the engine. Fig. 8 is a vertical section of a water tube containing a common puppet valve and strainer to be fixed to the lower end of the pipe attached to the cylinder.

The nature of this invention and improvement consists in a new construction of an engine consisting of a cylinder made in cylindrical sections of a peculiar construction inside, held together by screw rods and divided interiorly by parallel partitions or plates having radial partitions on the under side of said plates forming water chambers and open in the center for water to pass through the cylinder from bottom to top within which cylinder is made to revolve a central shaft turned with velocity by any convenient power having fixed upon it a number of circular plates containing on their under sides a number of curved paddles for throwing the water by centrifugal force against the interior of the cylinder and causing it to rise therein and pass out at the top and at the same time forming a partial vacuum which is instantly filled by the entrance of the water through an opening in the bottom of the cylinder caused by the atmospheric pressure forcing the water to rise through a tube connected to a neck around said opening in the cylinder.

A is a cylinder made in sections. A¹ A² are two sections made alike except as to length, the lower one being the longest in order to increase the size of the water chambers.

A³ is the top of the cylinder, A⁴ is the bottom of the cylinder.

A⁵ A⁵ are parallel partitions cast with

and forming part of the sections of the cylinder made concave on the upper side and flat on the under side, open in the center for the passage of the water at A⁶ and having a series of radial partitions A⁷ on the under side forming water chambers A⁸.

B is the revolving shaft to which the circular plates and buckets are attached arranged in the center of the cylinder.

C is a step or box for its lower gudgeon to turn in arranged across the opening for the admission of the water.

D is a common stuffing box in which the upper part of the shaft turns.

E is a pulley on its upper end around which is passed a band leading to the driving power for turning the shaft.

F are the circular plates fixed to the shaft and carrying the buckets for raising the water. These plates are convex on top and flat on the bottom and of less diameter than the interior of the cylinder and placed below the level of the radial partitions of one of the circular partitions and above the concave surface of the next circular partition below. The water lifting paddles G of said circular plate are segments of circles cast with the plates. They extend from the circumference to the eye and are placed equidistant. Those marked G² are made in the same manner but extend only about two-thirds the distance between the circumference and the eye. They are made tapering and convex on their lower edges corresponding with their concave surfaces of the bottom of the cylinder and the concave surfaces of the circular partitions near which they revolve.

H are the screw rods for holding the parts of the cylinder together. The end plate A⁴ of the cylinder is made concave on the inside and has a neck I to which a coupling box J is affixed to secure the upper end of the induction tube. The end plate A³ of the cylinder is made circular and flat on both sides and is fitted with a central stuffing box D and a collar and coupling K for the induction tube. Also with a cylindrical rim A⁹ corresponding with the section A¹ for making a water chamber in the upper part of the cylinder into which the water is forced by the revolving paddles G.

L is a tube closed at the lower end by a strainer and open at the upper end which is fastened to the lower end of the conducting pipe perforated around its circumference with small apertures to admit the wa-

ter and exclude sticks and dirt, and provided with a puppet valve to hold the water in the cylinder and keep it filled.

5 The drawings represent an engine constructed with two paddle wheels and ring plates, but for ordinary purposes it is best to construct them with three or four paddle wheels, varying however in number according to the depth of the well from, and the
10 height to which the water or other liquid is to be raised or forced, having generally a diameter of about four or six inches. But to raise large columns of water as in the use of the fire engine it will be necessary to
15 increase the diameter of the paddle wheels and add to their number, as each wheel performs its own office, the power depending upon the number of wheels and their velocity.

In starting the engine it should be 20 charged or filled with fluid. The puppet valve in the strainer will prevent the escape of the water when the joints are tight. The arrows 1, 2, 3, 4, 5, 6, 7, 8, 9 indicate the direction of the water during the opera- 25 tion of the engine.

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

The combination of the circular revolving paddle plates G with the cylindrical ring 30 plates A¹ A² and radial partitions A^r constructed arranged and operated in the manner and for the purpose set forth.

WILLIS H. JOHNSON.

Witnesses:

THOMAS MOFFETT,
L. B. ADAMS.