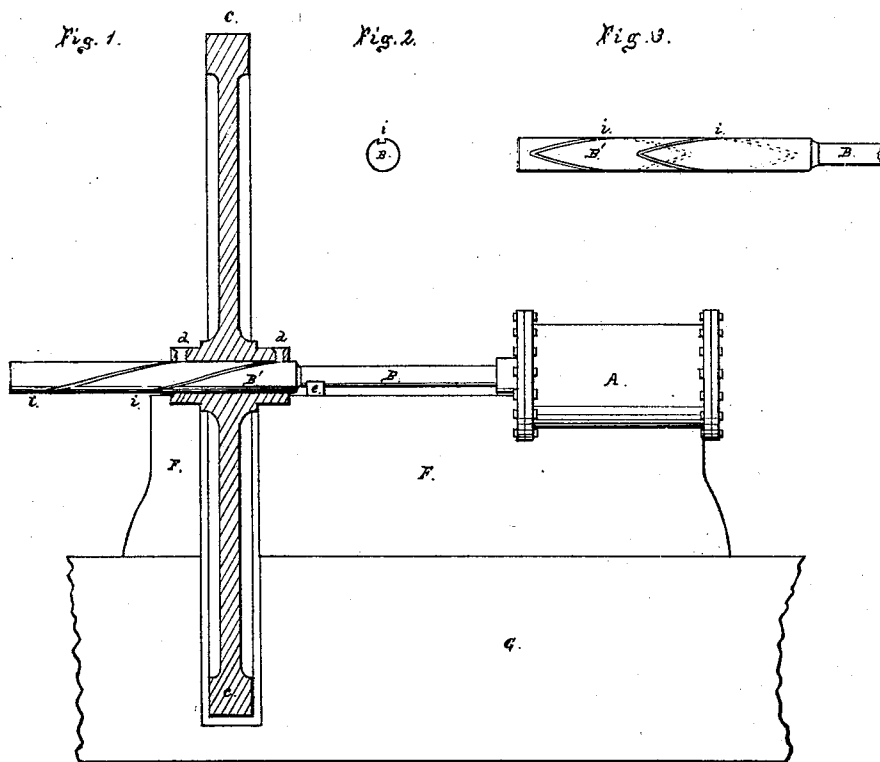


R. K. Moffatt,
Converting Motion.
No. 110268. Patented Dec. 20, 1870.



Witnesses;
M. P. Williams

Inventor;
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UNITED STATES PATENT OFFICE.

RICHARD R. MOFFATT, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN THE MODES OF APPLYING MOTIVE POWER TO MACHINERY.

Specification forming part of Letters Patent No. **110,268**, dated December 20, 1870.

To all whom it may concern:

Be it known that I, RICHARD R. MOFFATT, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Methods of Applying Motive-Power to Machinery, &c., of which the following is a specification.

The nature of this invention consists in a novel manner of applying power and giving continuous motion to a wheel by means of a piston which passes through the center or axis of said wheel. Upon the surface of the piston are spiral grooves, which extend longitudinally the same distance that is given to the stroke of the piston by the action of the steam in the cylinder. These grooves extend laterally, at the same time making one-half a revolution around the piston in the length of the grooves. The grooves are then reversed and continued back to the point of starting, at the same time making one-half a revolution on the other surface of the piston, which makes a continuous groove around the surface of the piston. On the inner surface of the hub of the wheel are pins or projections, which fit in the grooves upon the piston in such a manner that when the piston is forced through the hub forward and backward the entire length of the stroke, the wheel will revolve continuously as the pins slide upon the incline surface of the grooves on the piston. By reversing the action of the piston when at any point between the ends of its stroke, the motion of the wheel is also reversed and caused to revolve in an opposite direction. By this method of applying power an even and continuous pressure is communicated to the wheel, which is not the case in the crank-motion now in general use.

In the accompanying drawings, which form part of this specification, Figure 1 represents an engine constructed on my plan, and showing the fly or driving wheel in section. Fig. 2 is a cross-section of the piston. Fig. 3 is a view showing part of the piston, and taken upon a line at right angles from the view of piston as seen in Fig. 1.

To enable others skilled in the art to make and use my invention, I will describe its construction and mode of operation.

In the drawings, A represents an engine-cylinder. B is the piston. B' is that part of the piston which moves in the hub of the wheel C.

On the inner surface of the hub of the wheel C are one or more pins or projections, *d*. These pins are made adjustable, and yet can be firmly secured to the hub of the wheel.

Upon the surface of the piston B' are grooves *i*, which extend longitudinally in a spiral manner, making a distance the entire length of the stroke, and at the same time one-half the distance around the piston B'. These grooves are then reversed and continued back to the point of starting, and making another one-half of the distance around the piston, which forms a continuous groove, extending upon the piston-head B' the length of the stroke, and at the same time the entire distance around the piston-head back to the point of starting.

e is a guide upon the piston, which slides upon the face of the bed F, and thus prevents the piston from turning as it is being forced through the wheel forward and backward.

In the operation of a machine constructed as above described, a more even application of power is conveyed than upon the crank-motion now so much in use, and the solid piston is more simple in its construction and operation.

To reverse the motion of the wheel, the engine is stopped when the piston is at any point between the extremities of its stroke. The action or motion of the piston is then reversed, and the wheel thus caused to revolve in an opposite direction continuously as the piston moves forward and backward the entire length of the stroke.

If desired, the grooves upon the piston may be constructed so as to make but one-quarter the distance around the surface of the piston in its entire length, which is the same as the stroke, and another quarter on its return, making one-half a revolution as the piston moves forward and backward once. The grooves are continued forward and backward in like manner, making the other half of a revolution and at the same time a continuous groove. The wheel will then revolve once as the piston is forced forward and backward twice. By this method extra pins may be applied, which project from the opposite surface of the hub of the wheel and fit into and operate in the grooves.

The grooves and pins may be reversed, if desired, so that the pins are upon the surface of the piston and the grooves upon the inner surface of the hub. The grooves may be also made upon the accelerating system, if desired.

This improvement is well adapted for screw-propellers, as the action of the piston is as direct upon the screw as upon the wheel; and also for locomotives, &c., as then the cylinder is placed between the driving-wheels, with the piston working through both heads of the cylinder, each end of the piston passing through the center hub or axis of the driving-wheels, and as the grooves upon either end of the piston are in opposite directions, the wheels revolve both in one and the same direction continuously.

Having thus fully described the nature and operation of my invention, I desire to secure by Letters Patent—

Giving continuous motion to a wheel, screw-propeller, &c., by means of a piston which passes through or works in the hub or axis of the wheel, substantially as and for the purpose herein set forth.

R. R. MOFFATT.

Witnesses:

HENRY A. RICE,
ALEX. W. HARRIS.