

T. D. RICHARDSON.
Motor Engines.

No. 137,865.

Patented April 15, 1873.

Fig 1.

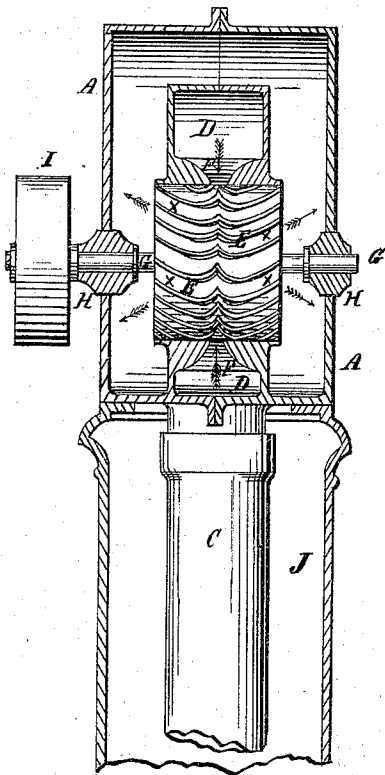
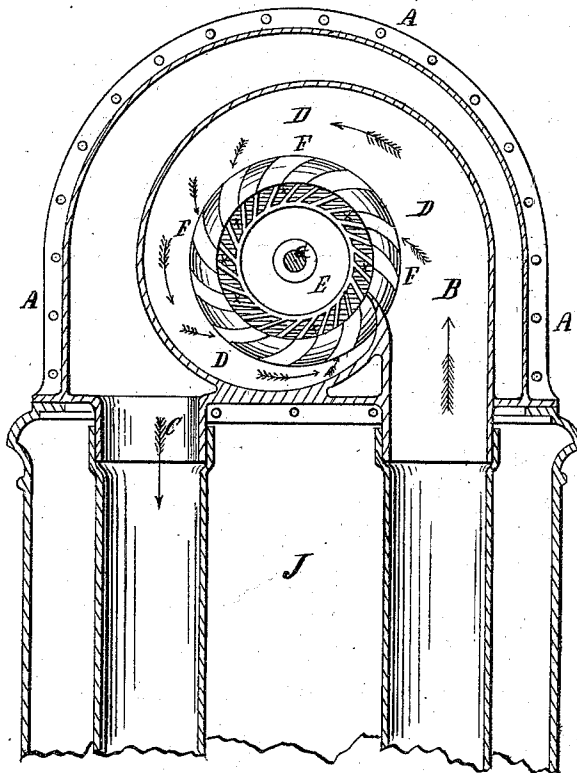


Fig 2.



Witnesses

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THOMAS D. RICHARDSON, OF NORTH PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN MOTOR-ENGINES.

Specification forming part of Letters Patent No. **137,865**, dated April 15, 1873; application filed December 10, 1872.

To all whom it may concern :

Be it known that I, THOMAS D. RICHARDSON, of North Providence, in the county of Providence and State of Rhode Island, have invented a new and Improved Motor-Engine, of which the following is a specification :

In the accompanying drawing like letters indicate like parts.

Figure 1 is a transverse vertical section, with the wheel in perspective. Fig. 2 is a longitudinal vertical section.

The parts of my invention may be thus described: A is the external covering or case, inclosing the working parts of the mechanism. It is provided with two pipes, B and C, for the supply and discharge of the water, respectively. From the supply-pipe B rises a conduit or flume, D, which is bent in a circular or serpentine form, and entirely surrounds the wheel E. This conduit is of the same width throughout, but its height continually and regularly diminishes until the top and bottom of it meet together. On the inner surface, throughout the entire length, at regular intervals, are ports or jets FF, which open into the conduit at an angle, to conduct the water to the wheel, and yet not to break its force. The wheel revolves upon its axle G, the ends of which rest upon the journal-bearings H in the outer case. Upon the periphery of the wheel, at short and regular intervals are concavo-convex buckets *x x*, the shape of which is shown in Fig. 1. They are set at an angle and in such a manner as to present, both vertically and horizontally, a concave surface toward their corresponding ports. The water, striking against these, is discharged at the sides of the wheel into the outer case, as indicated in Fig. 1, and thence through the waste-pipe C. A fly-wheel or gearing, I, is placed upon the end of the spindle G, and operates the connected machinery. The whole mechanism may rest upon a pillar, J, within which are concealed the water-pipes. The outer case may be plated, or otherwise ornamented. The water enters the feed-pipe at a certain pressure, as the case may be, and though its volume is constantly reduced by so much as passes through the ports in its progress, the pressure does

not decrease, because it is exerted in a space correspondingly smaller, and so is the same in power at the last port as at the first of the series. The diminishing size of the flume, from its beginning to its end, secures a uniformity of pressure through the entire length, which would not be the case if the conduit were of uniform size throughout. The water flows in a continuous current through every port at the same time, and strikes against every bucket of the wheel with the same pressure on all sides, thereby reducing friction in the revolution of the wheel. Being discharged upon the wheel in the middle of the buckets, it there diverges toward each side, and exhausts its power against the concave surfaces, until it flows out into the case and through the waste-pipe. The wheel, being buried in water, receives pressure at every point along all its buckets at the same time. The wheel is constructed so as to fit closely in its chamber, and, working upon the true center throughout the bore, permits no water to pass until it exhausts the power of it. The flow can be regulated in the usual way, and any power or speed can be obtained.

The outer case, with the conduit and pipes, may be cast in two equal parts, as shown in Fig. 2. The wheel should be made of metal, hollow, and water-tight, so as to be buoyant, and thus reduce friction. If it is desired to use steam as a motive power, the buckets should be shallower and nearer together.

By such a wheel, a cheap and efficient motive power can be obtained by connecting with the pipes of our city water-works, and which will be available for all the lighter mechanical operations, to drive sewing-machines, lathes, fans, and the like. If made of large size, and receiving power from a water-fall, or from steam, it is competent to move the heavier machinery of mills. But it is chiefly useful as furnishing a convenient and ever-ready power for domestic purposes, light manufactures, and the more delicate kinds of machine-work. For these purposes its compactness and economy are perfectly adapted.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. The wheel E, with its concavo-convex buckets *xx*, arranged as shown.

2. The diminishing conduit D, with its series of ports F F, and surrounding the circumference of a wheel, for the purpose of discharging water or steam upon the same.

3. The combination of the diminishing conduit D with its ports F F, the wheel E with

its concavo-convex buckets *xx* and axle G, the case A with its feed-pipe B, and waste-pipe C, all made and used substantially as described.

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Witnesses:

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