J. D. RICHARDSON.

HYDRAULIC ENGINE.

No. 187,048. Patented Feb. 6, 1877.

Fig. 2.

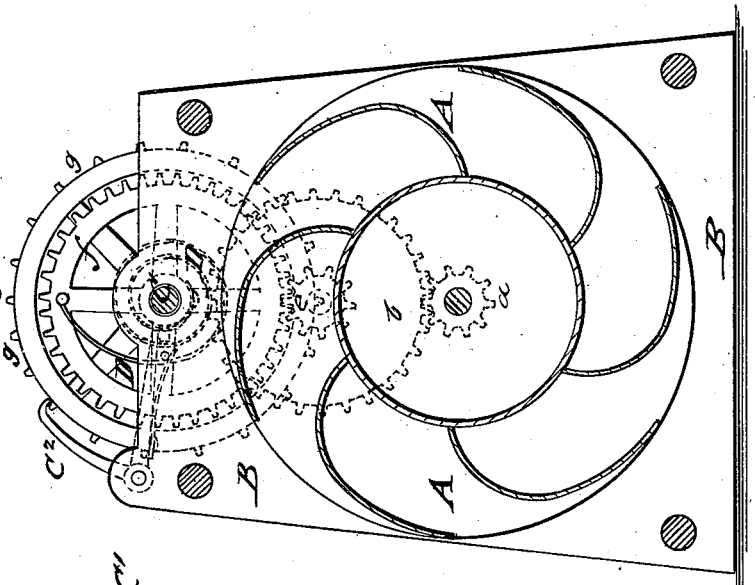


Fig. 3.

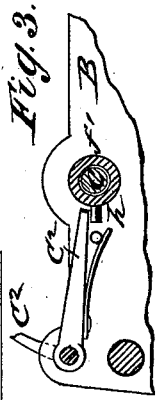
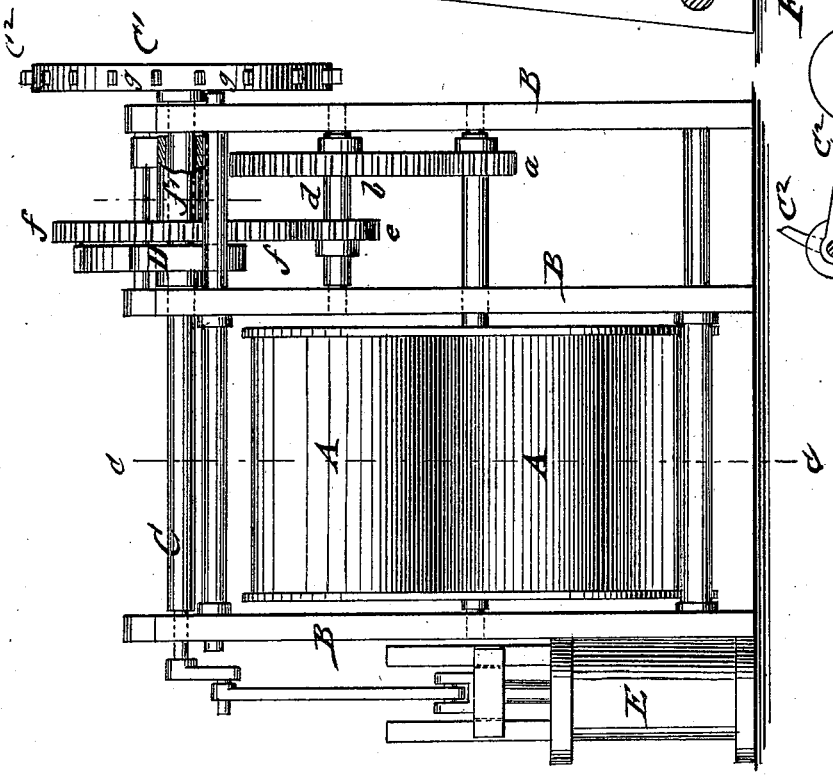


Fig. 1.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH D. RICHARDSON, OF WHEELER'S MILLS, KENTUCKY.

IMPROVEMENT IN HYDRAULIC ENGINES.

Specification forming part of Letters Patent No. **187,048**, dated February 6, 1877; application filed December 18, 1876.

To all whom it may concern:

Be it known that I, JOSEPH D. RICHARDSON, of Wheeler's Mills, in the county of Hurt and State of Kentucky, have invented a new and Improved Water-Power, of which the following is a specification:

In the accompany drawing, Figure 1 represents a side elevation of my improved water power or motor. Fig. 2 is a vertical longitudinal section of the same on line *c c*, Fig. 1; and Fig. 3 a detail side view of the brake-releasing mechanism of fly-wheel.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide an improved motor or water-power for the purpose of pumping water from a spring in the valley to the residence or other place, at some height above the same. The motor is adapted to the capacity of the water-head, and arranged to utilize even a small stream in economical manner.

The invention consists of a water-wheel arranged to drive, by suitable gearing and fly-wheel, a pump, by storing up the power of the wheel on a coiled spring, applied to a loose wheel and pump-operating shaft.

In the drawing, A represents a water-wheel of any suitable construction, preferably an overshot-wheel, as shown in the drawing.

The shaft of the water-wheel A turns in bearings of a supporting-frame, B, and intermeshes, by a pinion, *a*, with the gear-wheel *b* of an intermediate shaft, *d*, which transmits again the power by a pinion, *e*, to a gear-wheel, *f*, that is placed, by its sleeve *f'*, loosely on the pump-operating crank-shaft C. A fly-wheel, C^1, of considerable weight and size, is keyed to shaft C, and thrown into operation by a spring, D, which is attached to the loose gear-wheel *f*, and, by its inner end, to the crank-shaft C.

The rotation of the water-wheel causes the turning of the spring-acted wheel *f* until the power stored up in the spring is sufficient to overcome the resistance of the crank-shaft, so as to revolve the same and operate the pump E, assisted by the fly-wheel.

If the fly-wheel is not large enough, a brake, C^2, may be used, which engages, by its hook-shaped end, studs or projections *g* of the fly-wheel, and retains the same until the brake is released by a stud or pin, *h*, on the sleeve of the gear-wheel *f*. The pin *h* bears on a spring-acted lever-arm of the brake, so as to lift the same and admit thereby the turning of the crank-shaft and fly-wheel. As soon as the contact of stud *h*, and the brake-arm is terminated, the brake is carried down again on the fly-wheel and the power of the water-wheel is again stored up by the spring until another full revolution of wheel *f* is completed, and thereby the fly-wheel again released and the pump worked, and so on.

The power of the stream is thus utilized by being stored up by the spring, and intermittently applied to work the pump, furnishing thereby a plentiful supply of spring-water to the house situated on elevated ground above the spring, without any expense or trouble except the small cost of the motor.

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

1. A water-power for driving small pumps, &c., consisting of a water-wheel and of a loose gear-wheel, with a coiled spring attached to a pump-operating crank-shaft, with regulating fly-wheel, and connected by suitable gearing with water-wheel shaft, to produce the storing-up of the power in the spring and the intermittent working of the pump, substantially in the manner described.

2. The combination of the loose spring-acted gear-wheel *f*, having sleeve with projecting pin or stud, with the spring-acted lever-arm of the fly-wheel brake, to release brake and produce turning of pump-operating shaft, substantially as specified.

JOSEPH D. RICHARDSON.

Witnesses:
H. C. WHEELER,
J. W. BUTLER.