I. H. PALMER.
Wind-Mill Motor.

No. 210,803. Patented Dec. 10, 1878.

Fig. 1.

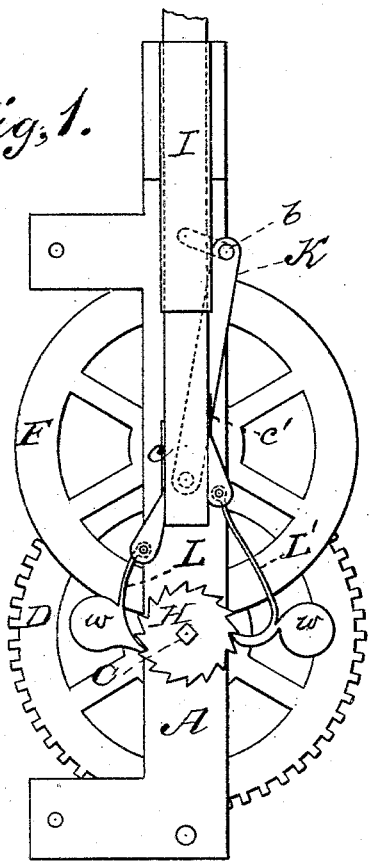


Fig. 2.

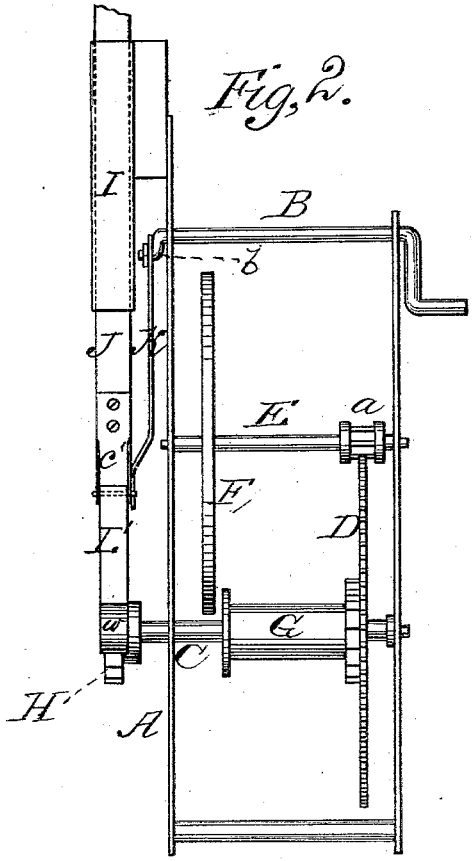
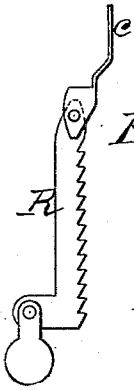


Fig. 3.



WITNESSES

Mary F. Athey.
F. J. Masi

INVENTOR

Isaac H. Palmer,
by E. W. Anderson,
ATTORNEY

UNITED STATES PATENT OFFICE.

ISAAC H. PALMER, OF LODI, WISCONSIN.

IMPROVEMENT IN WINDMILL-MOTORS.

Specification forming part of Letters Patent No. **210,803**, dated December 10, 1878; application filed November 9, 1878.

To all whom it may concern:

Be it known that I, ISAAC H. PALMER, of Lodi, in the county of Columbia and State of Wisconsin, have invented a new and valuable Improvement in Windmill-Motors; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of my improved motor. Fig. 2 is a front view thereof, and Fig. 3 is a detail.

This invention has relation to improvements in mechanical powers designed especially to be actuated by a wind-engine.

The object of the invention is mainly to devise means in a reliable and economical manner for overcoming the dead-centers in pumping, grinding, and hoisting machines, and in other mechanisms usually operated by wind-wheels.

The nature of the invention consists in the arrangement and novel construction, in connection with a winding-drum or other device, having a ratchet-wheel upon the end of its shaft, of weighted vertically-vibrating pawls, a reciprocating shaft, to which said pawls are hinged, a crank-shaft, and a pitman connecting the crank and reciprocating shafts, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates a strong upright frame, the side pieces of which are suitably braced together, and afford bearings in their upper portions to a crank-shaft, B, and at their lower portions to a second shaft, C. This shaft has a large gear-wheel, D, that engages a pinion, *a*, upon a fly-wheel shaft, E, having its bearings in the frame A between the shafts B C. Shaft E, as its name implies, carries the fly-wheel F.

In illustrating my invention I have shown shaft C provided with a winding-drum, G; but it is clear that by means of suitable gearings or pulleys and belts it may be connected to the operative parts of a pump, grinding-mill, or saw-mill, and used to equal advantage as with a drum.

The shaft C has upon one end, outside of the frame A, a saw-toothed gear or ratchet wheel, H, the function of which will be hereinafter fully set forth.

I represents an oblong metallic guide, secured rigidly to the frame A in any suitable manner, directly over the ratchet-wheel H. In this guide is arranged an endwise-movable bar, J, of corresponding form, and connected by means of a pitman, K, to the arm *b* of the crank-shaft.

The rotation of the latter consequently imparts a vertically-reciprocating motion to the said bar J, that carries on its lower extremity the pawls L L′. These pawls are hinged to the metallic cheek-plates *c c′*, bolted or otherwise secured to the lower end of the plunger-bar, the former extending below the latter, as shown in Fig. 1.

Pawl L is hinged to the cheek-plate *c*, and its free end bites upon the ratchet H during the descent of the plunger-bar aforesaid; but during its ascent it slides over its teeth, and the pawl L′ bites upon it. One of these pawls is always at work, their operation being alternate; consequently the drum will receive a practically continuous motion, and the dead-centers be practically overcome. These pawls are each provided with a weight, *w*, outside of their pivotal points, that holds their free or griping ends constantly in contact with said ratchet-wheel, and renders their engagement therewith nearly instantaneous. Sometimes, instead of the pawls L L′, I may use rack-bars R, hinged to the cheek-plates, like the said pawls, and provided with re-engaging weights.

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

1. The combination, with the driving-shaft of a mill, hoisting-machine, or other mechanism, and a ratchet-wheel on one end thereof, of a reciprocating plunger-bar, pawls on the end of said bar alternately engaging said

ratchet-wheel, a crank-shaft, and a pitman connecting said shaft and bar, substantially as specified.

2. The combination, with the driving-shaft C, having a ratchet-wheel, H, of the reciprocating plunger-bar J, the pawls L L′, hinged on the ends of said plunger, provided with a weight outside of their pivots, and engaging the said ratchet-wheel alternately, a pitman, and crank-shaft, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ISAAC H. PALMER.

Witnesses:

S. H. WATSON,

R. D. RICHOLSEN.