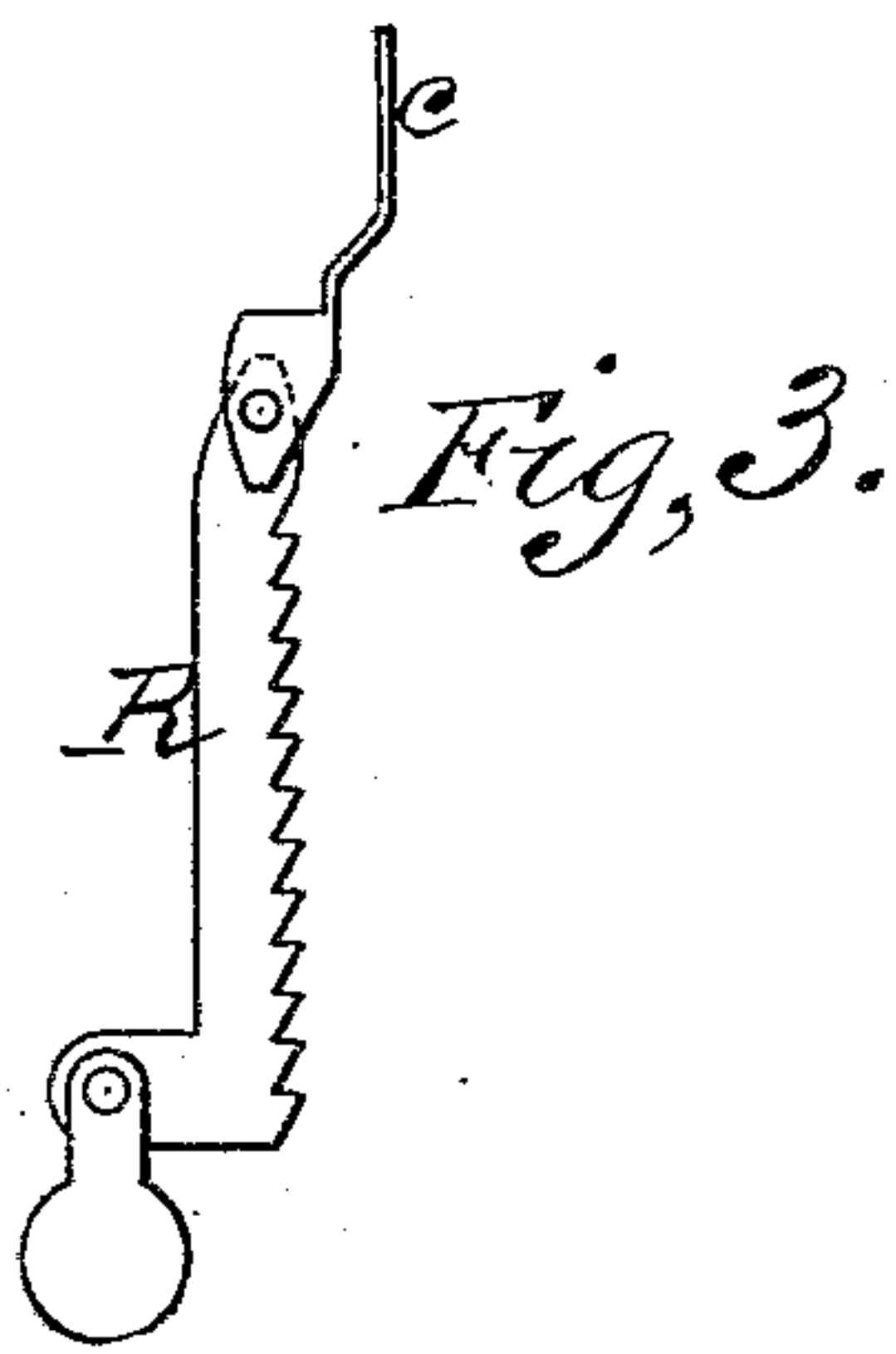
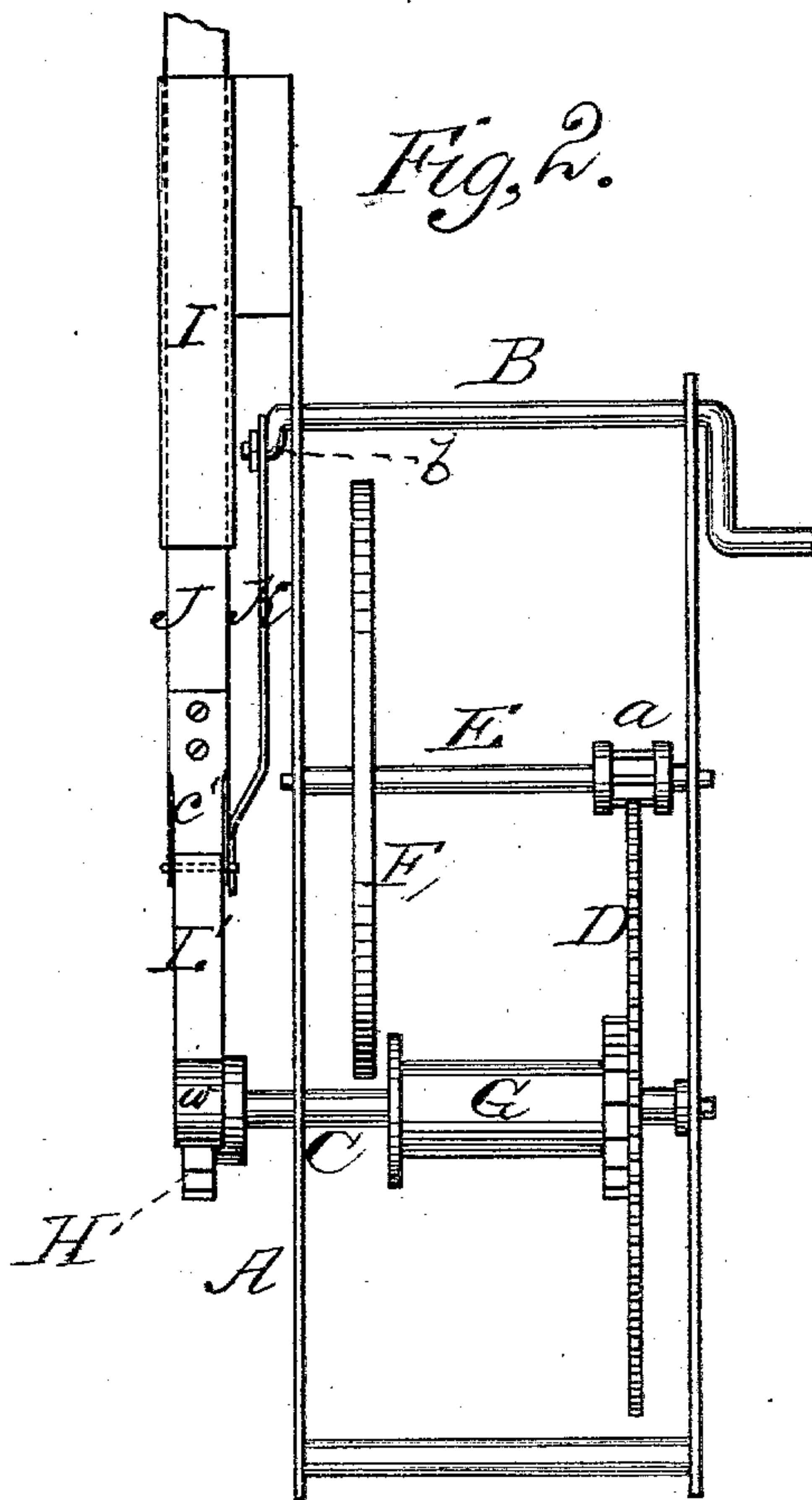
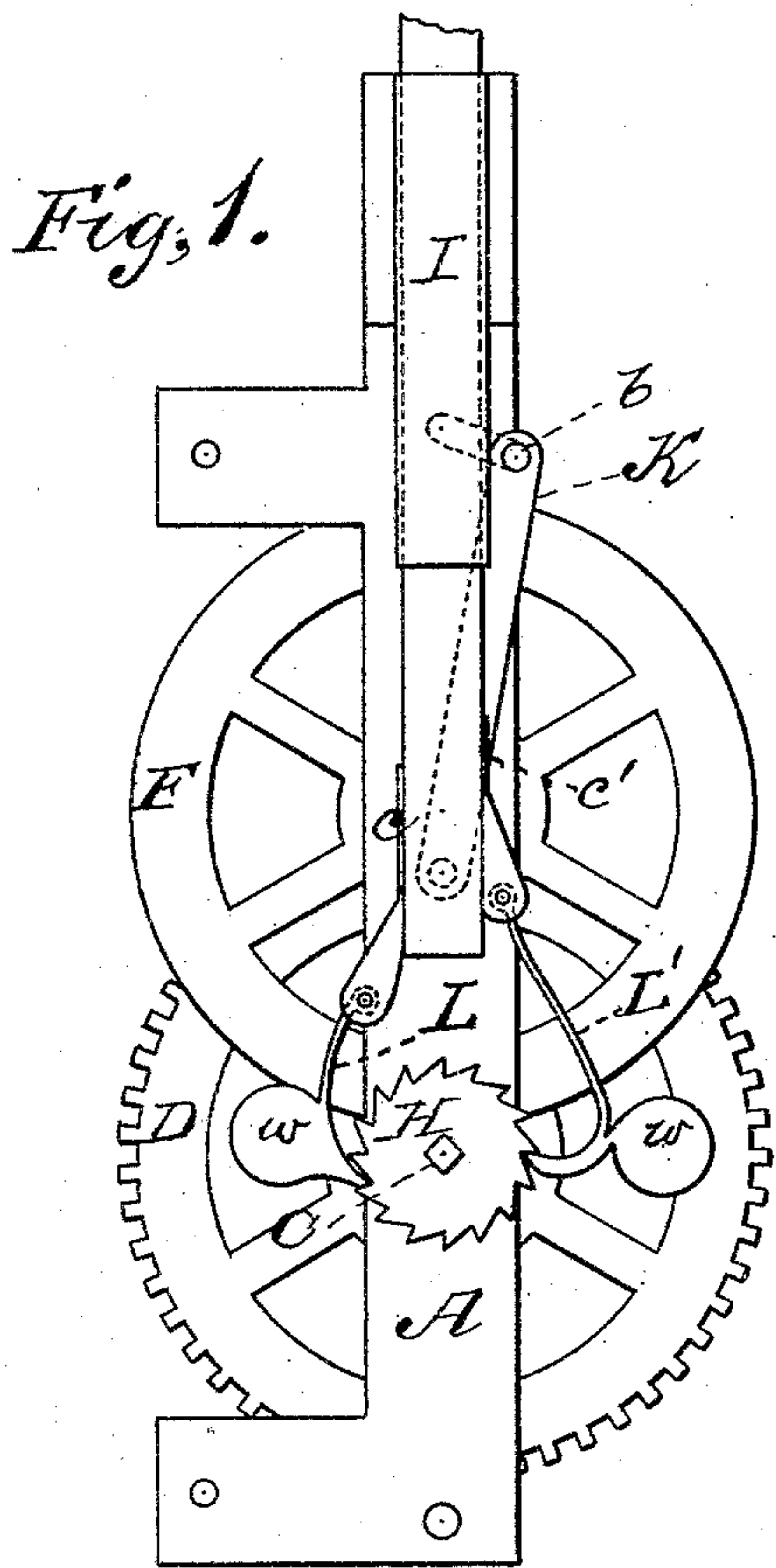


I. H. PALMER.  
Wind-Mill Motor.

No. 210,803.

**Patented Dec. 10, 1878.**



WITNESSES

Mary S. Utley.  
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# 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 gears or pulleys and belts it may be con-

nected 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 gripping 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 pit-

man, 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.