(No Model.)

W. S. MARSHALL.

Mechanical Movement for Windmill.

No. 227,910. **Patented May 25, 1880.**

FIG. 1.

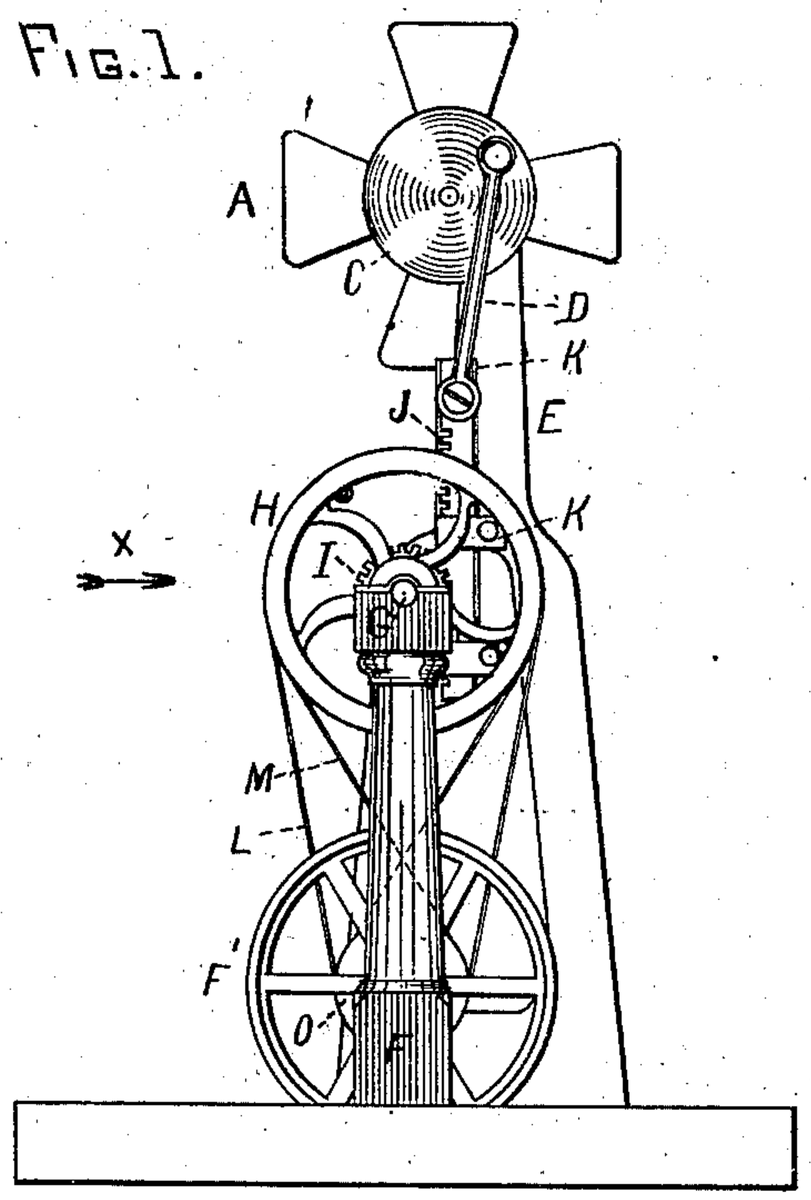


FIG. 2.

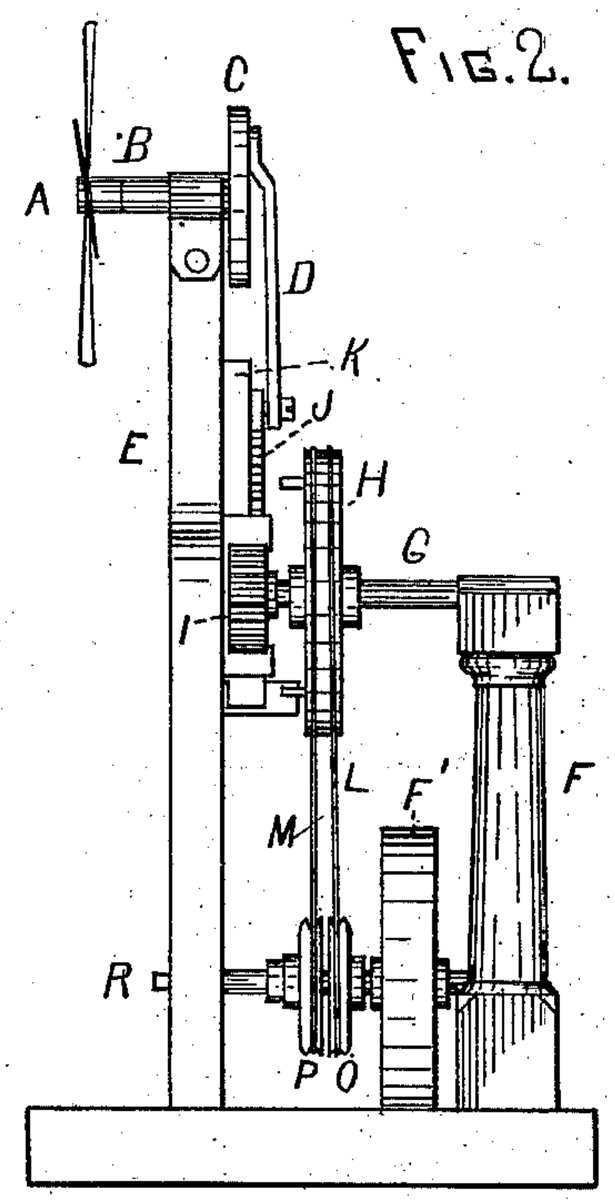


FIG. 3.

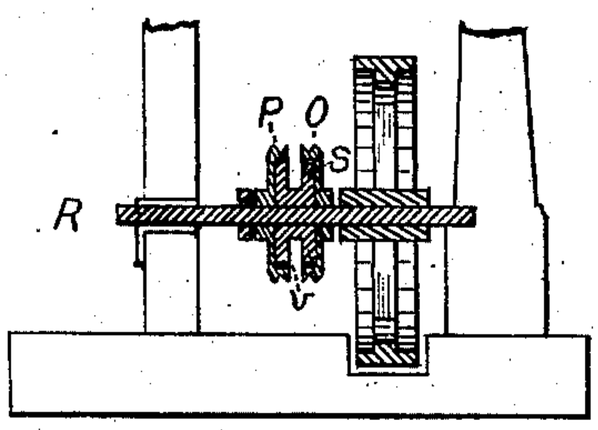


FIG. 4.

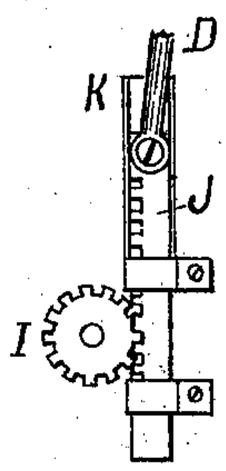
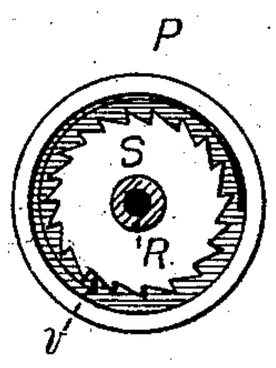


FIG. 5.



WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM S. MARSHALL, OF BATAVIA, ILLINOIS.

MECHANICAL MOVEMENT FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 227,910, dated May 25, 1880.

Application filed March 8, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. MARSHALL, of Batavia, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Mechanical Movements for Windmills, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of mechanism embodying my improvements, looking toward the rear face of the wind-wheel; Fig. 2, a side elevation thereof, looking in the direction of dart *x*, Fig. 1; Fig. 3, a section through the lower shaft and ratchet-wheels; Fig. 4, an elevation of the rack and pinion removed from the other mechanism; Fig. 5, a face view of one ratchet-wheel and a transverse section of the lower shaft, said section being taken between the two ratchet-wheels.

The present invention relates to obtaining a continuous rotary motion from the pitman-shaft of a wind-wheel.

The nature of the invention consists, first, in a compound pulley-wheel which is driven by a rack and pinion, so as to have an oscillating motion, and which carries two bands, one of which passes under a ratchet-wheel on the shaft to be driven, so that the ratchet-wheel turns in the same direction as the compound pulley, and the other band is crossed between the compound pulley and the other ratchet-wheel on the shaft to be driven, so that each band alternately turns the shaft on which the ratchet-wheels operate in one continuous direction, and in a buffer-spring placed so as to be operated upon by a pin on the compound pulley and check the rotation of said pulley and aid the return movement of the same.

A represents the wind-wheel, B the shaft thereof, C the crank-wheel, and D the pitman-shaft, of an ordinary windmill.

E is the frame which supports the wind-wheel, and, together with the post F, supports the mechanism herein described.

G represents a shaft having bearings in the frame E and post F, and supporting a compound pulley, H, and a pinion, I.

J is a cog-rack, which has given to it a vertical reciprocating movement by means of the pitman D, which is pivoted to it. This rack operates in a guide, K, which may be provided with anti-friction rollers, if desired, to bear against the rack and lessen the friction, and it gives a rotary motion to the pinion I, and consequently a rotary motion to the compound pulley H.

For heavy machinery a double groove is formed in the periphery of the pulley H for carrying two cords, L and M. The cord L passes under a ratchet-wheel, O, without being crossed, and the cord M is crossed and then passes under a ratchet-wheel, P, so that the cords M L alternately turn the shaft R, on which the ratchet-wheels are, in the same direction that the compound pulley H rotates.

Two ratchet-wheels, O P, are respectively placed on the shaft R, and they are recessed out at their inner sides to receive ratchets S, which are attached to the shaft R. The wheels O P are fitted to turn on the shaft R, and to or near to the internal peripheries of the rims surrounding their recessed faces are pivoted spring-pawls *v*, which engage the ratchets S and turn the shaft R.

I do not confine myself to the precise form of ratchet-wheels O P, but use any form of ratchet which will perform the function described. For driving light machinery a single pulley, H, single cord L, and single ratchet-wheel P will answer the purpose, and the part to be driven may act as a balance-wheel; or a balance-wheel may be attached where a continuous rotary motion is required.

I do not claim to have been the first to obtain rotary motion from the reciprocating pitman of a windmill, but confine myself to the novelty set forth in the following claims.

I claim and desire to secure by Letters Patent—

1. The combination of the crank-wheel C, pitman D, pinion I, cog-rack J, buffer-springs, and pulley-wheel H, for giving a continuous rotary or oscillating movement to the shaft R by means of one or more cords, M, with one or more ratchet-wheels on shaft R, as specified.

2. The combination of the crank-wheel C and pitman D of a windmill with the cog-rack J, pinion I, shaft G, pulley-wheel H, carrying one or more cords, M L, with one or more ratchet-wheels, O P, for giving a continuous rotary or an intermitting motion to the shaft R, as specified.

WILLIAM S. MARSHALL.

Witnesses:
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