J. SKINNER.

Device for Converting Reciprocating into Rotary Motion.

No. 216,537. Patented June 17, 1879.

Fig. 1

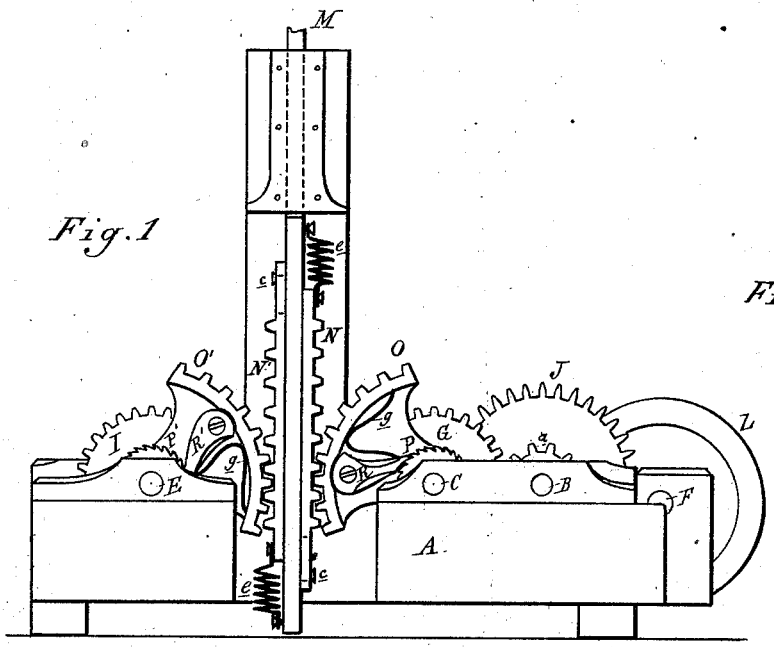


Fig. 3

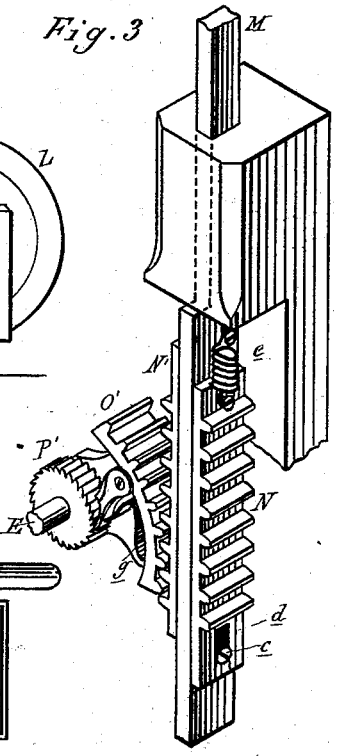
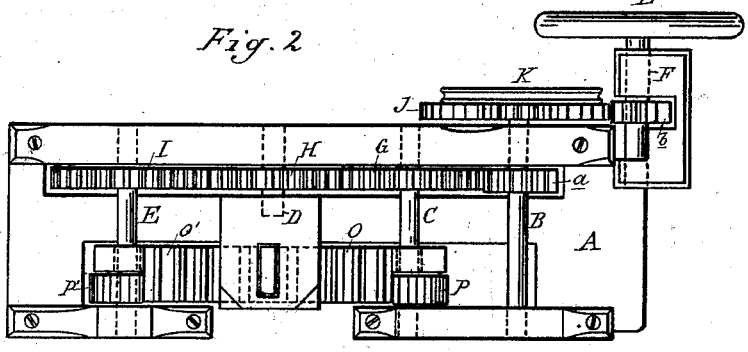


Fig. 2



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JOHN SKINNER, OF CHARLOTTE, MICHIGAN.

IMPROVEMENT IN DEVICES FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

Specification forming part of Letters Patent No. **216,537**, dated June 17, 1879; application filed November 12, 1878.

To all whom it may concern:

Be it known that I, JOHN SKINNER, of Charlotte, Eaton county, Michigan, have invented an Improvement in Attachments to Windmills for Converting the Reciprocating Motion of the Pump-Rod into Rotary Motion, of which the following is a specification.

The nature of my invention relates to new and useful improvements in the construction of attachments to windmills, designed to convert the reciprocating motion of the pump-rod into a rotary motion.

The invention consists, first, in the construction and adaptation of rack-bars to the pump-rod, so that sudden strain and jar upon the parts are avoided; second, in the construction of suitable toothed sectors, ratchets, and pawls, in combination with rack-bars, for imparting a rotary motion to a chain of gear which operates the main shaft; and, third, in the peculiar construction, arrangement, and combinations of the various parts, as is more fully hereinafter set forth.

Figure 1 is a side elevation. Fig. 2 is a plan view; and Fig. 3 is a perspective view of the lower end of the pump-rod, with the adjustable rack-bars connected thereto, and showing one sector with its ratchet and pawl.

In the accompanying drawings, which form a part of this specification, A represents a suitable frame, across which are properly journaled the shafts B, C, D, E, and F, the shaft B representing the main driving-shaft. Upon the shafts C, D, and E, and meshing with each other, are keyed or otherwise secured pinions G, H, and I, the former of which meshes with a smaller pinion, *a*, upon the main shaft. Upon the outer end of the shaft B is secured a toothed driving-wheel, J, and the grooved pulley K, the wheel J meshing with a pinion, *b*, upon the shaft F, on the outer end of which is secured a balance-wheel, L.

M represents the pump-rod or main shaft of a windmill, upon either side of which and at the lower end thereof are attached the rack-bars N N′ by means of the pins *c*, which pass through the slots *d* in one end of the rack-bar into the pump-rod, while the other ends are secured by means of the springs *e*, as shown in Figs. 1 and 3.

Sleeved upon the shafts C and E are toothed sectors O O′, which engage with the rack-bars N N′, as shown, and ratchet-wheels P P′. Pivoted to the sectors are pawls R R′, which are kept in engagement with their respective ratchet-wheels by means of the springs *g*, as is clearly shown in the drawings.

In practice, in the downstroke of the pump-rod the sectors O O′, by their engagement with the rack-bars on the pump-rod, are compelled to scribe the arc of a circle, while at the same time the pawl of the sector O′ compels the ratchet-wheel P′ to partially rotate, and with it the shaft to which it is connected, this partial rotation being transmitted through the chain of gear above described to the driving shaft and wheel. In the upstroke of the pump-rod the action of the sector, ratchet, and pawl upon the pump-rod, is the same as above described in the reverse direction, while the sector and pawl O′ R′ at the same time resume their original position ready to operate again upon the downstroke of the pump-rod.

In the continued reciprocation of the pump-rod a continuous rotation is imparted to the driving-wheel and pulley, from which a belt may be led to operate any light machinery. All sudden jar upon the rack-bars is obviated by the manner in which they are connected to the pump-rod, having as they do a slight vertical movement on the same.

What I claim as my invention is—

1. In a device substantially as described, the racks N N′, adjustably attached to the pump-rod, substantially as described.

2. In combination with a double rack-bar, substantially as described, the toothed sectors O O′, provided with spring-pawls R R′ and ratchets P P′, when arranged to impart a rotary motion to their respective shafts, substantially as specified.

3. In a device substantially as described, the combination of the adjustable rack-bars N N′, toothed sectors O O′, pawls R R′, ratchet-wheels P P′, shafts B, C, D, E, and F, pinions G, H, I, J, *a*, and *b*, pulley K, and fly-wheel L, when arranged substantially in the manner and for the purposes set forth.

JOHN SKINNER.

Witnesses:
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