No. 700,363. Patented May 20, 1902.

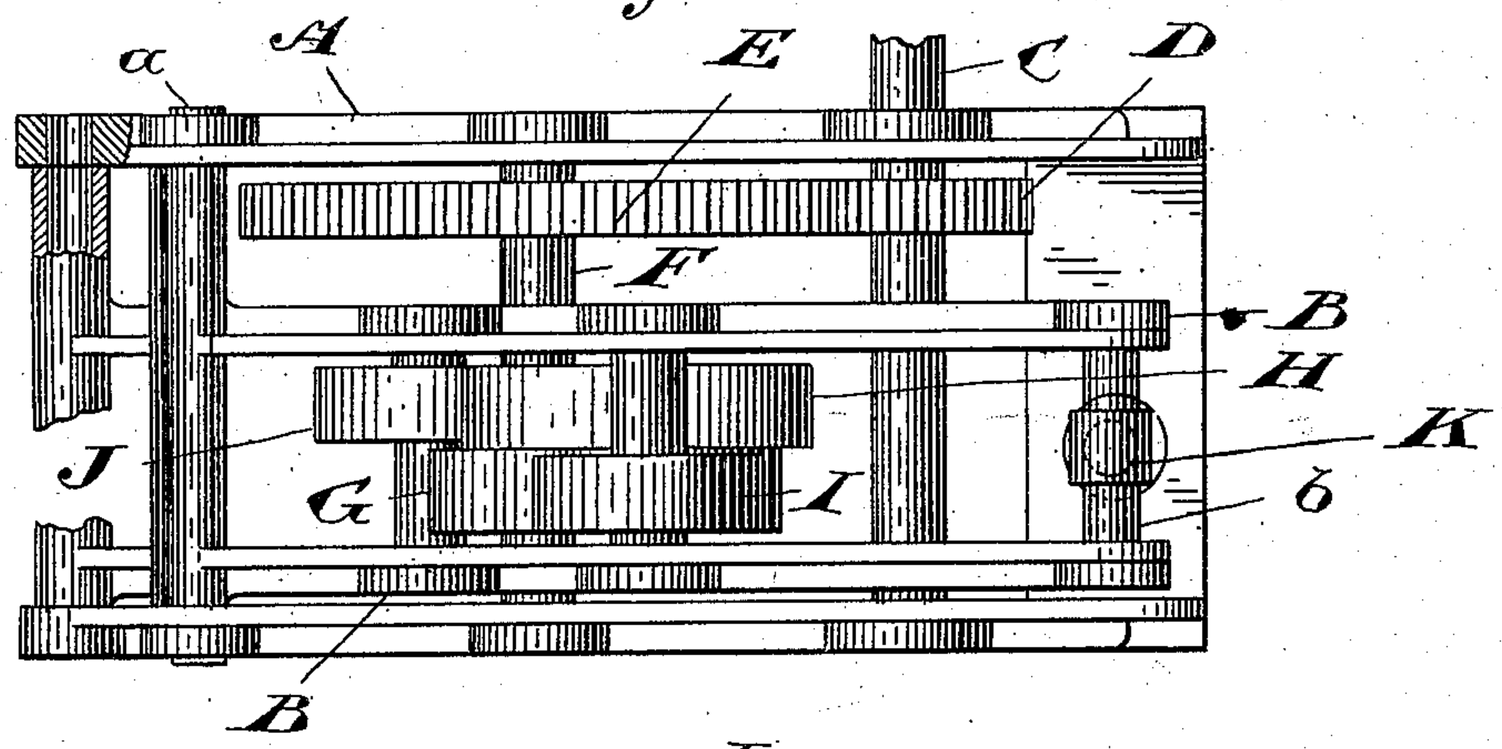
M. C. NIXON.

MECHANISM FOR CONVERTING MOTION.

(Application filed Aug. 1, 1901.)

(No Model.)

Fig. 2.



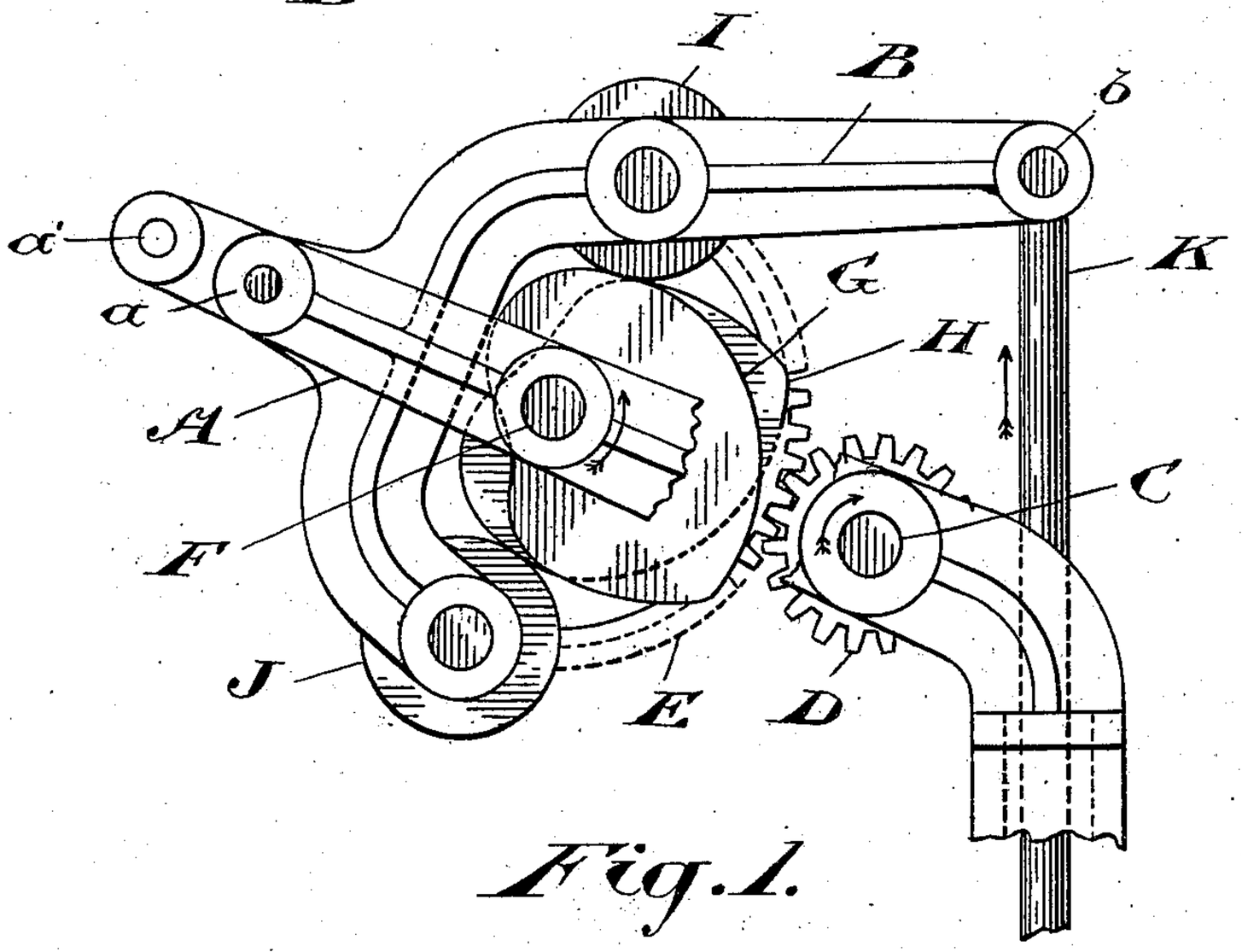


Fig. 1.

Witnesses

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MECHANISM FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 700,363, dated May 20, 1902.

Application filed August 1, 1901. Serial No. 70,484. (No model.)

To all whom it may concern:

Be it known that I, MOSES C. NIXON, of the city of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Mechanism for Converting Rotary Motion into Reciprocating Motion, Particularly Suitable for Windmills, of which the following is a specification.

The object of my invention is to devise mechanism of the class described which will perform the work with the least maximum power or at varying speeds. In the case of windmills it is desired to make the mill operate with comparatively light winds. Hence as the downward stroke of the pump plunger-rod of the windmill is assisted by the weight of the parts and the upward stroke retarded it is necessary to make the upward stroke slower than the downward stroke to equalize the power required, so that the mill will operate with the least maximum wind-pressure. I attain this object by the combination of parts hereinafter more specifically described and then definitely claimed.

Figure 1 is a side elevation, partly broken away, of my improved mechanism. Fig. 2 is a plan view of the same.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the main frame of the mechanism, suitably shaped to support the different parts. Pivoted on this frame at *a* is a movable or swinging frame B.

It will be noticed that an extra pivot-bearing *a'* is provided in the main frame A for the pivot *a* of the movable frame B, so that the length of stroke of the mechanism may be varied at will.

Journaled in the main frame A, which may be of any suitable construction, according to the purpose for which the movement is used, is a shaft C, to which is rigidly secured the gear-pinion D. This pinion meshes with the gear-wheel E, secured to the shaft F, journaled in the main frame A. Secured to this shaft is a double cam or two cams G and H side by side. Above the cam G on the movable frame B is journaled a roller I, and on the same frame below the cam H is journaled the roller J.

The sides of the movable frame B at its outer end are connected by the cross-bar *b*. On this cross-bar is pivoted the plunger-rod K, adapted to work through a suitable opening in the frame A.

The cams G and H are so shaped and proportioned that the movable frame B will be lifted comparatively slowly and with increased power and after the highest point has been reached will be dropped comparatively rapidly to the lowest position. As the weight of the plunger-rod assists the power on the downward stroke and acts against the power on the upward stroke, it is evident that less power is required to force the plunger downward than to raise it. Hence less power is required and a more rapid speed is possible on the downstroke than on the upstroke. The demand on the power of a windmill is thus equalized by constructing the cams as already described, enabling it to perform the work with less maximum power or wind than by other devices.

While the cams, as shown, are so shaped that the cam G is always in contact with the roller I and the cam H in contact with the roller J, making the motion of the mechanism positive at all times, yet it is not the intention to limit the invention to this exact construction.

The power of the windmill is applied to the shaft C in any suitable manner, and the comparatively rapid motion of the windmill is slowed down and the power increased by the small pinion D, meshing with the large gear-wheel E on the shaft carrying the operating-cams.

I prefer to pivot the movable frame as shown, though other arrangements might be adopted which would permit of its reciprocating motion under the action of the cams G and H.

Although this mechanism is particularly adapted for windmills, yet it may be readily applied to other purposes, and it is not the intention to limit the invention to that particular use.

It is of course understood that the terms "lifted" and "dropped," "up" and "down," and the like are only used relatively, as the mechanism may be used in other positions than the vertical.

What I claim as my invention is—

1. In mechanism of the class described, a main frame shaped to support the various parts; a movable frame so supported on the main frame that it may be moved in a vertical plane; and a plunger-rod secured to the said movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and projections on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other.

2. In mechanism of the class described, a main frame shaped to support the various parts; a movable frame so supported on the main frame that it may be moved in a vertical plane; and a plunger-rod secured to the said movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and rollers journaled on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other.

3. In mechanism of the class described, a main frame shaped to support the various parts; a movable frame so supported on the main frame that it may be moved in a vertical plane; and a plunger-rod secured to the said movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and projections on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other, the cams being so shaped as to give a comparatively slow up motion and a comparatively quick down motion of the movable frame.

4. In mechanism of the class described, a main frame shaped to support the various parts; a movable frame so supported on the main frame that it may be moved in a vertical plane; and a plunger-rod secured to the said movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and rollers journaled on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other, the cams being so shaped as to give a comparatively slow up motion and a comparatively quick down motion of the movable frame.

5. In mechanism of the class described, a main frame; a movable frame pivoted on the main frame; and a plunger-rod pivoted to the movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and projections on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other.

6. In mechanism of the class described, a main frame; a movable frame pivoted on the main frame; and a plunger-rod pivoted to the movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and projections on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other, the cams being so shaped as to give a comparatively slow up motion and a comparatively quick down motion of the movable frame.

7. In mechanism of the class described, a main frame; a movable frame pivoted on the main frame; and a plunger-rod pivoted to the movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and rollers journaled on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other.

8. In mechanism of the class described, a main frame shaped to support the various parts; a movable frame so supported on the main frame that it may be moved in a vertical plane; and a plunger-rod secured to the said movable frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; projections on the movable frame, one engaged by the under side of one cam and the other engaged by the upper side of the other; a gear-wheel fast on the cam-shaft; a driving-shaft journaled on the main frame; and a pinion fast on the driving-shaft and meshing with the aforesaid gear-wheel.

9. In mechanism of the class described, a main frame shaped to support the various parts; a movable frame so supported on the main frame that it may be reciprocated, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and projections on the movable frame engaged by the said cams to reciprocate the said frame.

10. In mechanism of the class described, a main frame; a movable frame adjustably pivoted on the said main frame, in combination with a shaft journaled in the main frame; two cams secured to the said shaft in different planes; and projections on the movable frame engaged by the said cams.

11. In mechanism of the class described, a main frame; and a movable frame so supported that it may be reciprocated, in combination with a shaft journaled in the main frame; and two cams secured to the shaft in different planes, the movable frame being adapted to be reciprocated by the said cams.

Toronto, July 30, 1901.

MOSES C. NIXON.

In presence of—
JOHN G. RIDOUT,
J. M. WEBSTER.