

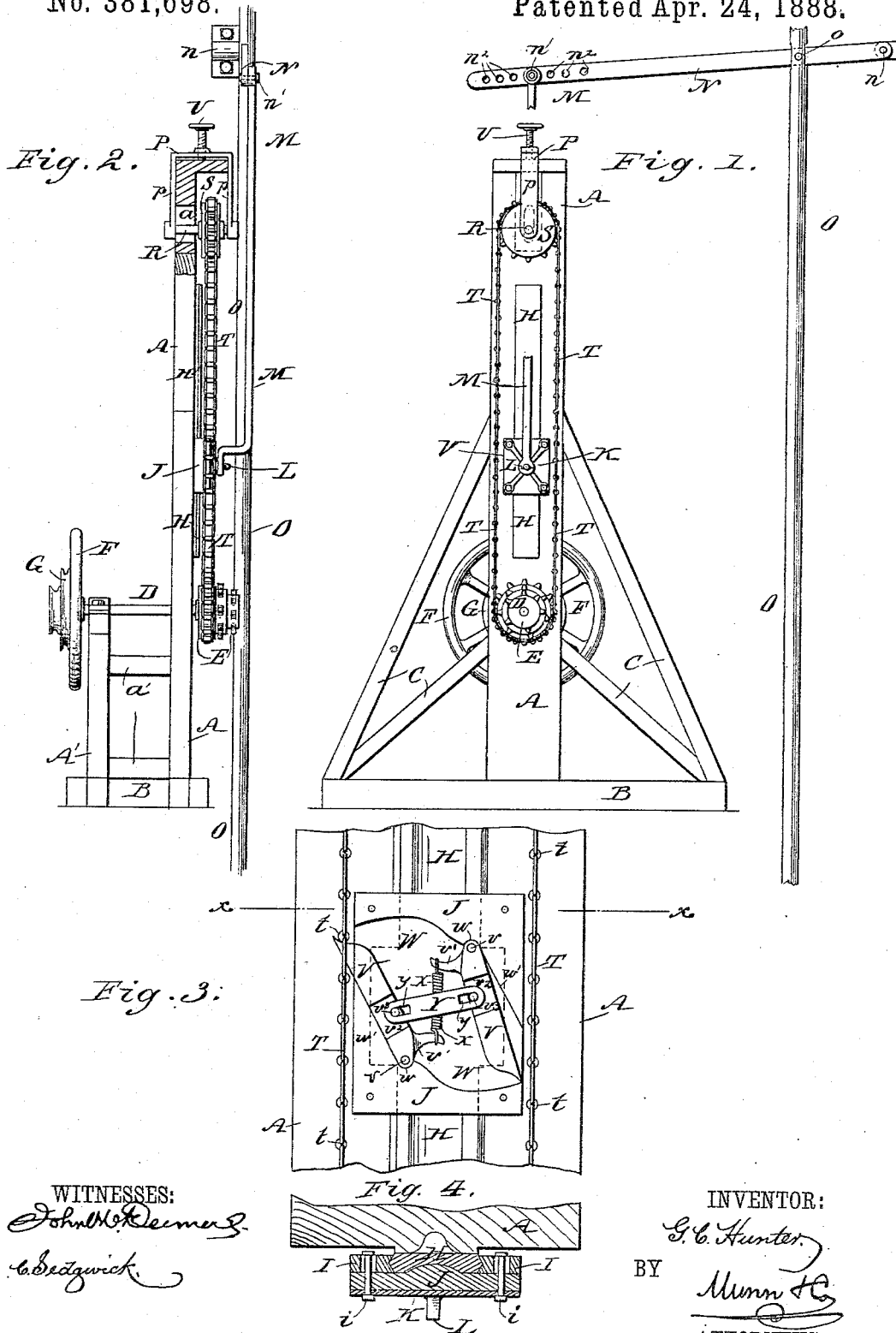
(No Model.)

G. C. HUNTER.

AUXILIARY MOTOR FOR WINDMILLS.

No. 381,698.

Patented Apr. 24, 1888.



WITNESSES:

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AUXILIARY MOTOR FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 381,698, dated April 24, 1888.

Application filed December 14, 1887. Serial No. 257,840. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CORWIN HUNTER, of Chebanse, in the county of Iroquois and State of Illinois, have invented a new and Improved Auxiliary Motor for Windmills, of which the following is a full, clear, and exact description.

My invention relates to a motor adapted more particularly for connection to a lever operated by the pump-rod of a windmill; and the invention has for its object to provide a simple, inexpensive, and efficient motor of this character.

The invention consists in certain novel features of construction and combinations of parts of the motor, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of my improved motor with the connecting-rod partly broken away, and shows a part of the pump-rod of the windmill and the lever driven by the rod to operate the motor. Fig. 2 is a view taken at a right angle to Fig. 1, and with the main post of the motor partly broken away and in section. Fig. 3 is an enlarged detail view of the pawl-carrying head or driver of the motor and adjacent parts, the outer face-plate of the head being removed, and Fig. 4 is a detail view in cross-section on the line *x x*, Fig. 3.

The frame of the auxiliary motor has a main post or upright, A, which is fixed to a suitable sill frame or base, B, to which the post is stayed by braces C. At the rear of the post A a shorter post, A', is set up on the sill B, and is stayed to the post A by short timbers *a'*. This short post A' supports one bearing or box of the main driving-shaft D, which has its other bearing in the main post A, and carries in front of this post a cone of chain wheels or pulleys, E, preferably three in number. At its other end the shaft D carries a balance or fly wheel, F, and a couple of belt-pulleys, G, one pulley being larger in diameter than the other, and either of them adapted to receive a belt to lead to a pulley or mechanism of any construction adapted to operate a churn, grindstone, corn-sheller, straw-

cutter, or any light machine not requiring great power to drive it.

To the front face of the post A is fixed a plate, H, preferably made of metal, and to opposite edges of which are fitted a couple of plates, I I, which are fixed by bolts *i*, or otherwise, to the inner face of the pawl-carrying head J of the motor, the pawls of which operate a link-belt to drive the shaft D, and in a manner presently explained. The plates I are preferably fitted by angular or grooved joints to the guide-plate H, and the middle parts of the plates I are preferably cut away to reduce the friction on the guide-plate, as the pawl-carrying head J slides up and down the post A.

The outer face of the head J is covered by a braced metal plate, K, provided with a central pin, L, onto which is fitted the lower end of a pitman-rod, M, the upper end of which is connected to the outer end of a lever, N, which is fulcrumed at its other end at *n* to any suitable support on the windmill-tower, and is connected to the vertically-movable pump-rod O, which is driven directly from the wheel of the windmill, in any ordinary or approved manner, not necessary to show or describe. I represent the lever N passed through a slot in the pump-rod and held to the rod by a pin, *o*; but any other suitable connection of the lever and rod may be adopted. It is obvious that as the pump-rod is operated the lever N will operate the pitman and reciprocate the pawl-carrying head on the auxiliary-motor frame.

To the top of the main post A is fitted a metal saddle, P, the front and rear pendent arms *p p* of which provide bearings for an upper shaft, R, which is thus hung in the saddle and carries a sprocket-wheel, S, from which a chain belt, T, passes downward to one of the cone-pulleys E on the main driving-shaft D. The upper shaft, R, passes through a slot, *a*, made in the post A, which allows the saddle P to be drawn upward by a screw, U, fitted at the top of the saddle to tighten the chain belt T or to slacken it, as may be desirable or necessary.

I particularly describe the self-acting pawls in the head J, which impart motion to the endless belt T, as follows: There are two of these pawls, V V, each of which is pivoted at one end by a pin, *v*, to diagonally-opposite parts

of the head J, and within a recess, W, in the head, said recess being provided for each pawl with a thrust-shoulder, *w*, next the pawl-pivot *v* and an inclined face or wall, *w'*, against which shoulders and walls the pawls have a solid bearing when they alternately engage the belt T to drive it as the head J reciprocates. Each pawl is provided with a horn or projection, *v'*, at its pivoted end, and a spring—preferably a coiled spring—X, is connected to the horns *v'* of both the pawls, and acts normally to throw the free ends of the pawls into engagement with the cross-bars *t* of the link-belt T, as hereinafter described. Each of the pawls is preferably provided with a face-recess, *v''*, in which is fixed a pin, *v'''*, which enters a slot, *y*, at one end of a metal link, Y. The spring X holds the pawl-pins *v'''* at the outer ends of the link-slots *y*, and at this time, when one of the pawls engages one side of the link-belt, the other pawl will be clear of or disengaged from the other side of the belt; but at any time the slots *y* of the pawl-connecting link will allow inward movement of both the pawls to allow them to clear the belt should it overrun the pawl carrying head.

The operation of the pawls V in driving the belt T is as follows: We will suppose that the pawl-head J in Fig. 3 of the drawings had just completed its downstroke and was just starting on its upstroke. On its late downstroke the right-hand pawl V had, by engagement with one of the cross-bars *t* of the belt T, moved the right-hand side of the belt downward, while the left-hand pawl V was clear of the belt. As the head J had started on its upstroke, the right-hand pawl, by contact with the belt, had been swung inward to the position shown and clear of the right-hand side of the belt; but this movement of said pawl has, through the medium of the spring X, which is somewhat closely coiled, thrown the left-hand pawl V outward to engage the left-hand side of the belt, and the continued upward movement of the pawl-head J will continue to operate the belt by the left-hand pawl until the limit of the upstroke is reached, and at the beginning of the downstroke of the pawl-head the left-hand pawl V will be thrown inward by contact of the upwardly-running left-hand side of the belt, which movement of this pawl will throw the right-hand pawl V outward to engage the down-running right hand side of the belt and continue the movement of the belt until the limit of the downstroke of the head J is reached, whereupon the right-hand pawl will again be disengaged from the belt and the left-hand pawl engaged with it on the upstroke, and so on, the two pawls acting alternately

and automatically to continue the motion of the belt T, and thereby impart continuous rotary motion to the shaft D, and through its pulley G to any connected machinery. Either or both of the two outer pulleys, E, may receive a belt or belts for driving any light machinery.

The rotative speed of the shaft D may be controlled or regulated by setting the pin *n'*, which connects the pitman M and lever N, into any one of a series of holes, *n''*, in the lever, and at greater or less distance from the fulcrum *n* of the lever, as will readily be understood.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a motor, the combination, with the cross-head J, of the pawls V V, pivoted at their opposite ends thereto and provided at their inner pivotal ends with inwardly-extending projections *v'*, and the coil spring X, connected at its ends to the said projections *v'* to throw the free ends of the pawls outward, substantially as set forth.

2. In a motor, the combination, with the cross-head J, recessed across its face, as shown at W, and oppositely inclined walls *w' w'*, forming stop-shoulders, of the pawls V, pivoted at their opposite ends within said recess at the inner ends of the inclined walls and formed with inwardly-extending projections *v' v'*, and the spring X, connecting said projections and throwing the pawls outward against the stop shoulders or walls *w'*, substantially as set forth.

3. In a motor, the combination, with a frame and an endless chain thereon, of a sliding head fitted on the frame, two pawls pivoted to the head, each provided with a pin between its ends and adapted to alternately engage opposite sides of the belt, a spring connecting the pawls, and a link slotted at its ends and receiving said pins thereon, substantially as herein set forth.

4. In a motor, the combination, with a frame and an endless belt moving thereon, of a sliding head, J, fitted on the frame and provided with a recess, W, and shoulders *w w'*, of pawls V V, pivoted next the shoulders *w* and adapted to the shoulders *w'* and provided with lugs *v' v'*, a spring, X, connected to these lugs, and a link, Y, attached to the pawls V V by a pin-and-slot connection, substantially as described, for the purposes set forth.

GEORGE CORWIN HUNTER.

Witnesses:

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