F. H. DRYDEN.

MEANS FOR CONVERTING MOTION.

APPLICATION FILED MAY 13, 1913.

1,141,323.

Patented June 1, 1915.

2 SHEETS—SHEET 1.

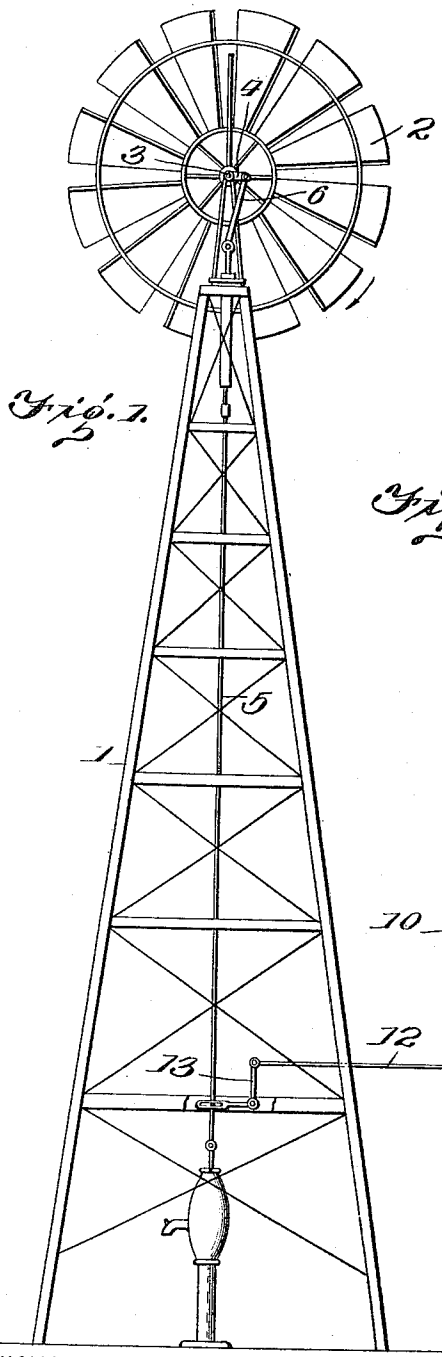


Fig. 1.

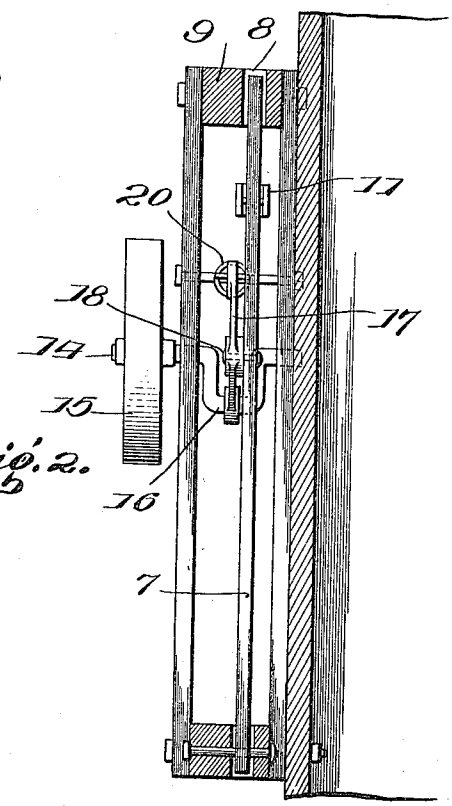
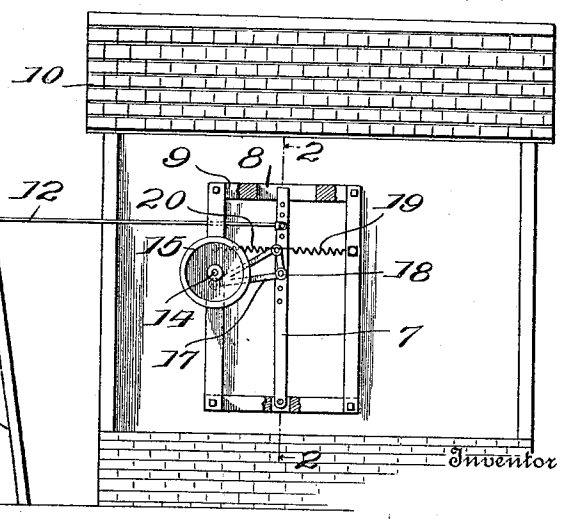


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

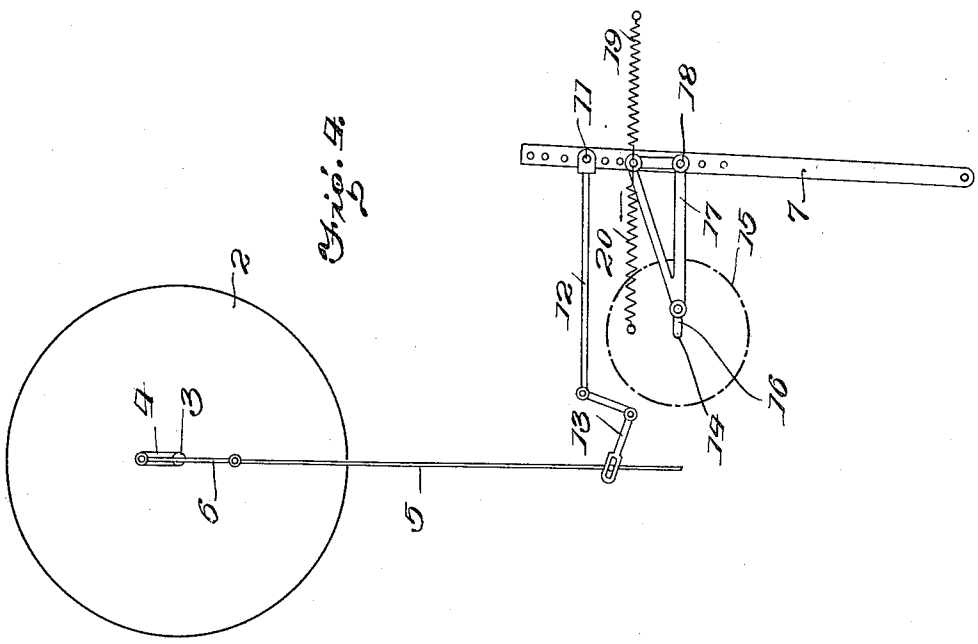
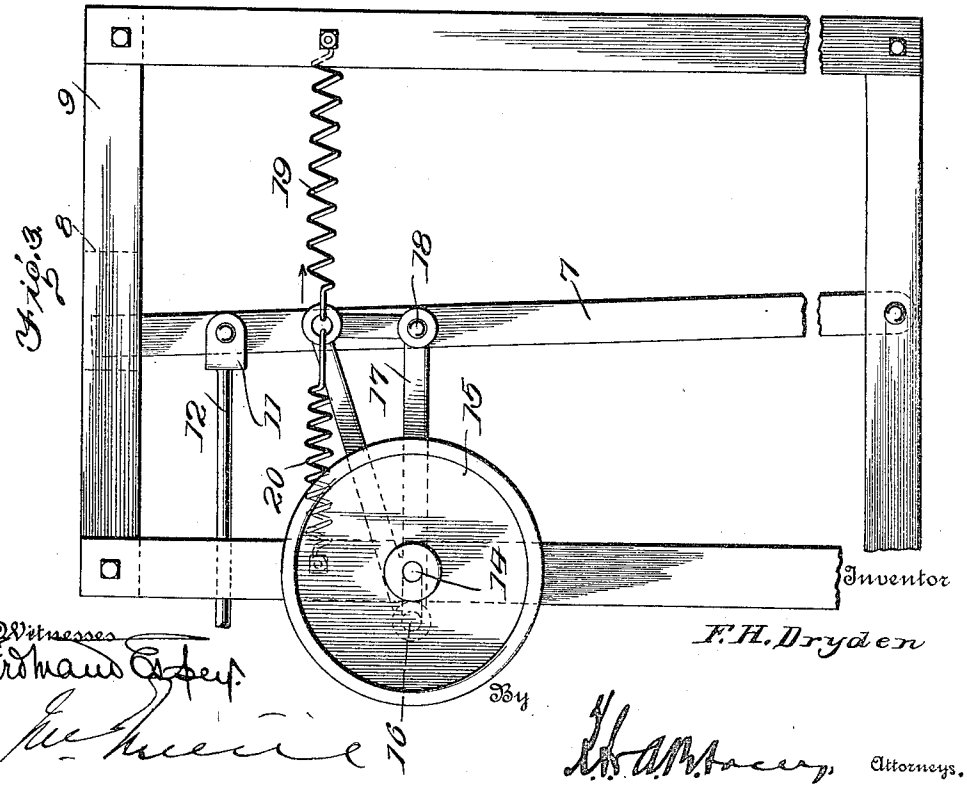


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MEANS FOR CONVERTING MOTION.

1,141,323. Specification of Letters Patent. Patented June 1, 1915.

Application filed May 13, 1913. Serial No. 767,401.

To all whom it may concern:

Be it known that I, FREDERICK H. DRYDEN, citizen of the United States, residing at Montgomery City, in the county of Montgomery and State of Missouri, have invented certain new and useful Improvements in Means for Converting Motion, of which the following is a specification.

This invention relates to means for converting reciprocatory into rotary motion and has for its primary object the provision of means whereby a windmill which has been designed more particularly for pumping purposes alone may be adapted to operate other machinery.

A secondary object of the invention is to overcome dead centers in the operation of the mechanism and other objects of the invention will appear as the description of the same proceeds.

The invention is illustrated in the accompanying drawings and consists in certain novel features which will be particularly pointed out in the claims following the detailed description.

In the drawings: Figure 1 is an elevation of a windmill having my improved device connected therewith; Fig. 2 is a section taken on the line 2—2 of Fig. 1 and on a larger scale; Fig. 3 is an enlarged elevation of my improved mechanism; Fig. 4 is a diagrammatic view.

In the drawings, 1 designates an ordinary windmill tower upon the upper end of which is mounted a wind-wheel 2 having a driving shaft 3 equipped with a crank 4, and 5 designates a plunger connected at its upper end to the said crank by a pitman 6 in the usual manner.

In carrying out my invention, I employ a lever or vibratory bar 7 having one end playing in a slot 8 in a guide bar 9 forming a part of a supplemental frame which may be erected at any convenient point, being shown within a power house 10. A clip or bracket 11 is pivoted to the lever or vibratory bar 7 and is preferably a fork on the end of a connecting rod 12 which is attached to a bell-crank 13 mounted on the tower and connected to the plunger 5 to be actuated directly thereby. The driven shaft 14 is equipped with a fly-wheel or pulley 15 or a gear wheel may be substituted for the said pulley or fly-wheel, as will be readily understood. To the crank 16 of the shaft 14, I pivotally attach the longer arm of an angle lever 17 which is pivoted at its bend or angle to the lever 7, indicated at 18, and it will be understood that the connecting rod 12 may be attached to the bar 7 at either side of the pivot 18 and at a greater or less distance therefrom according to the direction in which the crank 16 is to rotate and the length of the stroke thereof. To the extremity of the shorter arm of the angle lever 17, I secure a resilient member which is fixed at its opposite end to the frame. In the illustrated form of the invention, two springs 19 and 20 are illustrated extending in opposite directions from the angle lever and secured to the supplemental frame or any other fixed support.

It is thought the operation of my improved device will be readily understood. The wind-wheel 2 and its shaft 3 are rotated by the wind in the usual manner so that the crank 4 describes its usual orbit and imparts a vertical reciprocatory movement to the plunger 5. This movement of the plunger 5 will, of course, be transmitted through the bell-crank 13 and connecting rod 12 to the lever or vibratory bar 7, and the pivot 18 of the angle lever 17 will, of course, be carried back and forth as the plunger and the lever 7 vibrate. Assuming the parts to be in the position shown in Fig. 1, the wind-wheel and the fly-wheel, pulley, or gear wheel 15 are rotating in the direction indicated by the arrow respectively adjacent thereto. As the crank 16 of the shaft 14 approaches a horizontal position, the longer arm of the lever 17 and the said crank will approach alinement, as shown in Fig. 3, so that there will be a tendency of the crank to come to rest on the dead center and block the movement of the mechanism or else reverse the rotation of the crank shaft as the upper crank 4 starts upon its upward movement. This tendency, however, is overcome by the resilient connections between the angle lever and the support. As the angle lever travels with the vibratory bar 7 to the position shown in Fig. 3, the spring 19 is placed under tension, while the spring 20 is relaxed and the spring 19 will reach its maximum tension just as the crank 16 reaches the dead center point, whereupon the spring will overcome the load or friction between the angle lever and the crank and will pull upon the shorter arm of the angle lever, thereby causing the said lever to swing upon its pivotal connection with

the bar 7 and throw the crank 16 past the dead center. The movement of the upper crank will then cause the lower crank to travel continuously in the same direction in which it previously traveled so that a continuous uninterruped rotary movement will be imparted to the lower crank shaft and the machinery which may be connected to the said crank shaft by a belt or gearing will be efficiently operated. As the parts move to the position shown in Fig. 4, crank 16 will tend to rest upon a dead center at the opposite side of the shaft 14 and the spring 20 will be put under tension, while the spring 19 will be relaxed, the result being that when the crank 16 reaches the dead center, the angle lever will be swung about its pivot point so that the crank 16 will be carried past the dead center and interruption to the rotation of the crank shaft 14 be avoided.

From the foregoing description, it will be seen that I have provided an exceedingly simple mechanism, which may be readily mounted upon any windmill tower or connected with any reciprocating prime mover so that the reciprocatory movement of the pitman will be converted into rotary motion and any machinery continuously operated.

What I claim is:—

1. The combination of a driving crank shaft, a fixed support, a vibratory bar pivoted at one end to said support, connections between the driving shaft and said bar whereby the bar will be vibrated, a driven crank shaft, a lever pivoted upon the vibratory bar and fitted at one end to the driven crank shaft to actuate the same, and resilient connections between the free end of the said lever and the fixed support.

2. The combination of a driving crank shaft, a fixed support, a vibratory bar pivoted at its lower end to said support, devices connecting the driving shaft with said bar, a driven crank shaft, an angle lever pivoted at its angle upon the said bar and having one end fitted on the driven crank shaft, and a yieldable pressure device bearing upon the free end of the angle lever.

3. The combination of a driving crank shaft, a fixed support, a vibratory bar pivoted at one end to said support, a driven crank shaft, means connecting the driving crank shaft with the vibratory bar, an angle lever pivoted at its angle upon the vibratory bar and connecting the driven crank shaft therewith, and springs mounted at opposite sides of the angle lever and attached to the free end of said lever.

4. The combination of a fixed support, a guide thereon, a driving crank shaft, a vibratory bar fulcrumed at one end upon the support and having its free end playing in the said guide, means connecting the driving crank shaft with said bar, a driven crank shaft, an angle lever pivoted at its angle upon the vibratory bar and attached at one end to the driven crank shaft, and springs secured to the fixed support at opposite sides of the angle lever and attached to the free end of said lever.

5. The combination of a fixed support, a guide thereon, a vibratory bar fulcrumed at one end on the support and having its opposite end playing freely in said guide, a driving shaft, a connecting rod actuated by the driving shaft and adjustably secured to the vibratory bar, a driven crank shaft, an angle lever adjustably pivoted at its angle to the vibratory bar and having one arm connected to the driven crank shaft, and a yieldable pressure device acting on the free end of the other arm of the angle lever.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK H. DRYDEN.

Witnesses:
B. M. Sisk,
R. C. Brown.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."