C. SCHURMANN.

Device for Converting Reciprocating into Rotary Motion.

No. 226,359. Patented April 6, 1880.

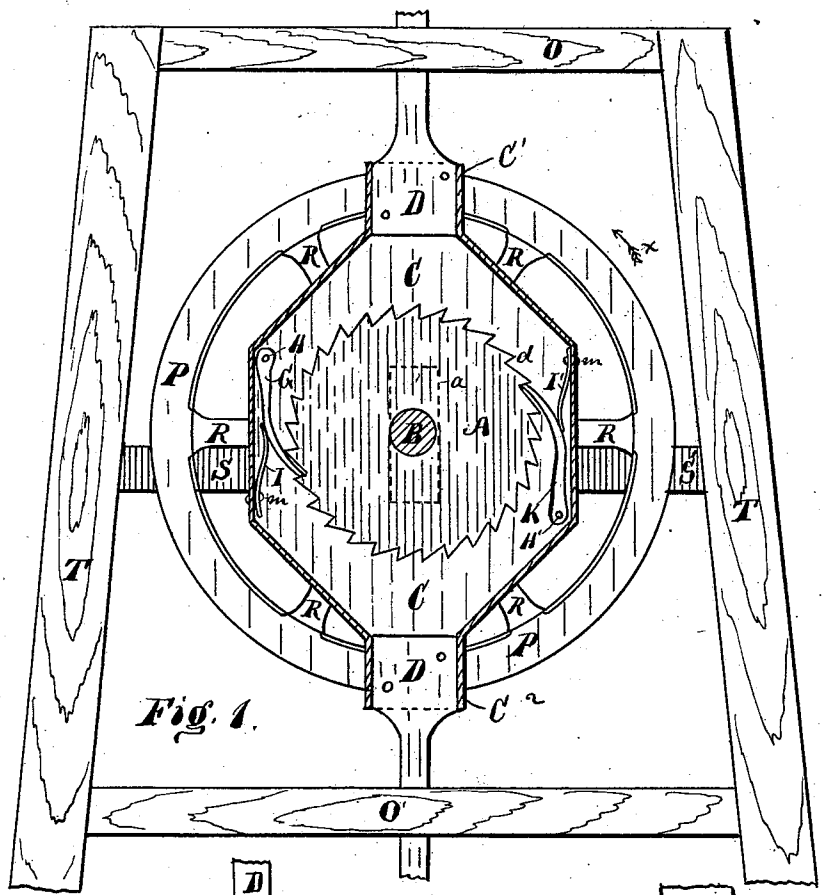

Fig. 1.

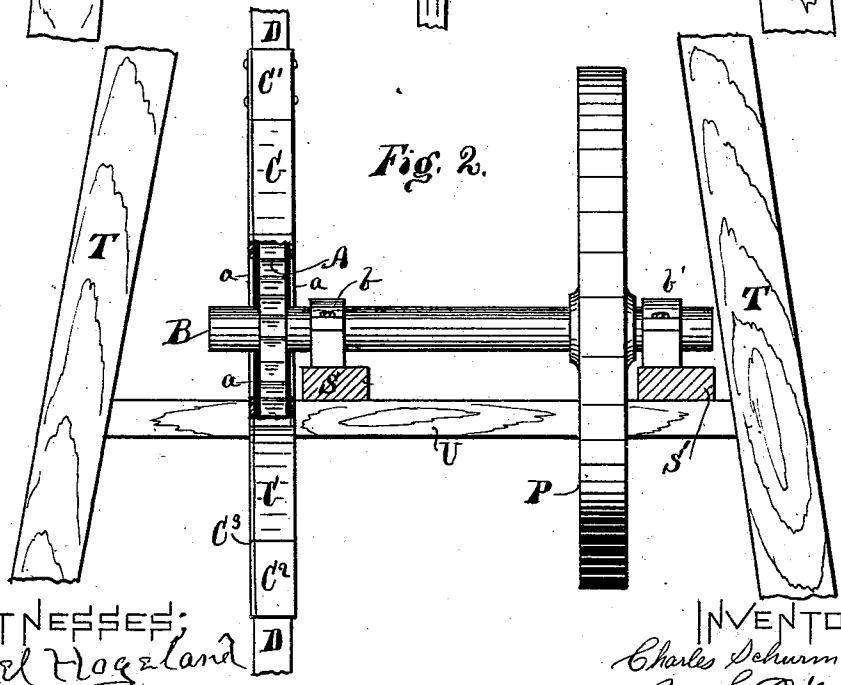

Fig. 2.

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per E. C. Stirk
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UNITED STATES PATENT OFFICE.

CHARLES SCHURMANN, OF INDIANAPOLIS, INDIANA.

DEVICE FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

SPECIFICATION forming part of Letters Patent No. 226,359, dated April 6, 1880.

Application filed January 26, 1880.

To all whom it may concern:

Be it known that I, CHARLES SCHURMANN, of Indianapolis, in the county of Marion and State of Indiana, have invented a certain new and useful Device for Converting a Reciprocating Motion into a Rotary Motion, of which the following is a specification.

My invention relates to improvements in which the vertically-reciprocating pump-rod operates in conjunction with a device for converting the reciprocating motion of the rod into a rotary motion; and the object of my improvement is to provide the vertically-reciprocating pump-rod with a device for operating a horizontal shaft provided with a pulley, and convert the vertically-reciprocating motion of said rod into a rotary motion, for the purpose of utilizing the wind-power of the mill for running straw-cutters, churns, and other light machinery. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a portion of a wind-mill frame, showing a front view of the device forming part of the vertically-reciprocating rod for converting the reciprocating motion of the rod into a rotary motion; and Fig. 2 is a side elevation of the same.

Similar letters refer to similar parts throughout the several views.

The frame T, with vertically-reciprocating pump-rod D, may be of any ordinary construction.

The reciprocating rod is represented in the accompanying drawings by the letter D, but is sawed into two parts, and the ends of each part are firmly secured to the sockets C' C^2 at the top and bottom of the metallic case C, thus forming a continuous rod, with the case C embodied. The case C is hollow, and provided with a cap, C^3. The central portions of the cap C^3 and case C are each provided with a rectangular slot, *a*, shown in dotted lines in Fig. 1, which is wide enough to permit the case to slide loosely on the shaft B and form a guide, and long enough to allow the rod D the full stroke of the windmill-crank (not shown) without striking the top or bottom of the shaft B. The shaft B is mounted in suitable bearings *b b'*, attached to cross-pieces S S' of the frame T, and is provided with a balance pulley-wheel, P. The front end of the shaft B projects beyond the cross-piece S far enough to pass through the rectangular slots *a a* in the case C and cover C^3, as shown in Fig. 2. Inside of the case C, and securely fastened to the shaft B, is the wheel A, having ratchet-teeth *d*. At the upper left-hand side of the case, between the periphery of the ratchet-wheel A and walls of said case, is a pawl, G, pivoted at H. The lower end of this pawl is held in contact with the ratchet-wheel teeth *d* by the spring I, which is securely riveted to the side wall of said case by the rivet *m*. At the lower right-hand corner of the case C is another pawl, K, pivoted at H' to the case. The upper end of this pawl is held against the ratchet-wheel teeth *d* by the spring I', as shown.

The operation of my improved device is as follows: The upper end of the rod D being connected to a crank of a wind-wheel (not shown) and the wind-wheel being in motion causes a reciprocating motion up and down to the rod D as the rod D ascends, carrying with it the case C. The pawl K causes the ratchet-wheel A, shaft B, and pulley P to rotate at the same time the pawl G is slipping over the teeth *d* of the ratchet-wheel. On the descending stroke of the rod the pawl G continues the rotary motion of the ratchet, the shaft, and pulley-wheel. Thus the reciprocating motion of the rod D, operating in conjunction with the apparatus just described, is converted into a continuous and steady rotary motion.

A belt may connect the wheel P with a straw-cutter, churn, or other machinery, and thus utilize the power of the windmill for purposes other than the mere lifting of water.

It is obvious that the ratchet-wheel A *d* may be dispensed with, and a plain friction-wheel may be used in lieu thereof, and that friction-clutches may be employed in lieu of the pawls, without departing from the essence of my invention.

I am aware that prior to my invention a re-

ciprocating motion has been converted into a rotary motion. I therefore do not claim such a device, broadly; but

What I do claim as my invention is—

The combination of the rod D D, the case C, with cover C^3, each having a rectangular opening, *a*, the pawls G K, springs I I′, ratchet-wheel A *d*, shaft B, and balance-pulley P, all substantially as shown and set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES SCHURMANN.

Witnesses:
E. O. FRINK,
HENRY SCHURMANN.