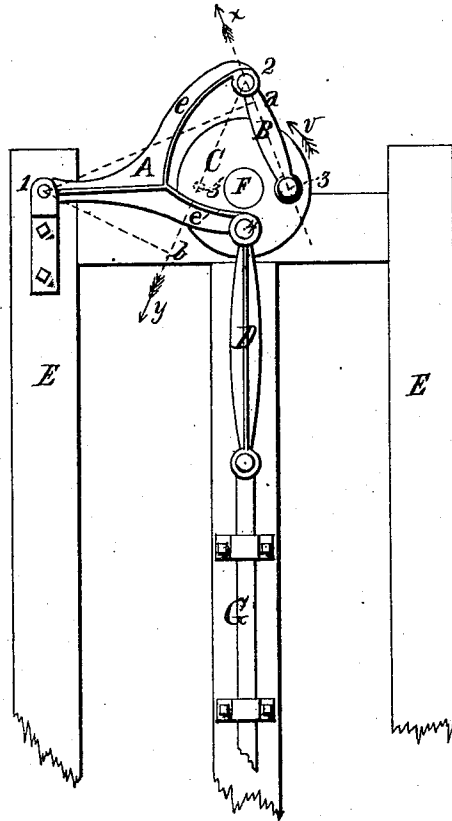


M. CROSSMAN.

DEVICE FOR CONVERTING MOTION.

No. 170,427.

Patented Nov. 23, 1875.



Witnesses

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UNITED STATES PATENT OFFICE.

MONTGOMERY CROSSMAN, OF MARSHALL, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO PRATT A. SPICER, OF SAME PLACE.

IMPROVEMENT IN DEVICES FOR CONVERTING MOTION.

Specification forming part of Letters Patent No. **170,427**, dated November 23, 1875; application filed October 25, 1875.

To all whom it may concern:

Be it known that I, MONTGOMERY CROSSMAN, of the city of Marshall, State of Michigan, have invented a new and useful Device for Converting Motion, of which the following is a full and accurate description, reference being had to the accompanying drawing, which shows a single elevation of the device, which we deem sufficient to illustrate its construction.

A face-plate and wrist-pin are formed upon a shaft, F, or a crank in the middle of a shaft may be used. A Y-shaped lever, A, having its fulcrum at 1, has one branch, e, connected with the wrist-pin 3 by a simple link, B. The other branch, e', is hinged at 4 to the pitman D. As the shaft F revolves, the point 4 moves in a more or less near approximation to a straight line as the point 1 is at a greater or less proportionate distance from the center of the shaft. By making both the lever A and the link B short in proportion to the stroke of the pitman, the downstroke of the pitman is made much quicker than the upstroke, the motion of the shaft being uniform, and in the direction indicated by the arrow v. The philosophy of this difference of motion will be understood by considering the changes in the direction of the moving force in the different relative positions of the parts. For, when B is in the position shown, the force is acting in the direction shown by arrow x, and its lever-arm about the fulcrum 1 is 1a. When the wrist-pin 3 has moved over to 3' the force is acting in the direction of arrow y, and its lever-arm is 1b. Now, this 1b is less than 1a. Hence,

while the wrist-pin is on that side of the shaft toward 1, the motion of the lever A is more rapid than when the wrist-pin is on the opposite side. A further consideration of the case would show that the upstroke requires more than half a revolution, while the downstroke requires as much less than half a revolution. This arrangement, with suitable modifications of proportions, may be adapted to many special uses. An instance of special fitness is its application to the transmission of motion from the main shaft of a windmill to its pitman for operating a pump. Here, the slow and powerful upstroke raises a column of water without sudden and undue strain, while the quicker downstroke meets little resistance. Another important advantage of its use in a windmill arises from the small lateral motion of the pitman. This permits the use of a much smaller tubular pivot, and consequently secures a much more prompt obedience of the mill to the regulator, or to the shifting direction of the wind.

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

The device for converting motion herein described, consisting of the link B and Y-shaped lever A, in combination with a revolving crank or wrist-pin, 3, and pitman-rod D, when arranged substantially as shown and described.

MONTGOMERY CROSSMAN.

Witnesses:

G. S. BARRETT,
JNO. E. RANDALL.