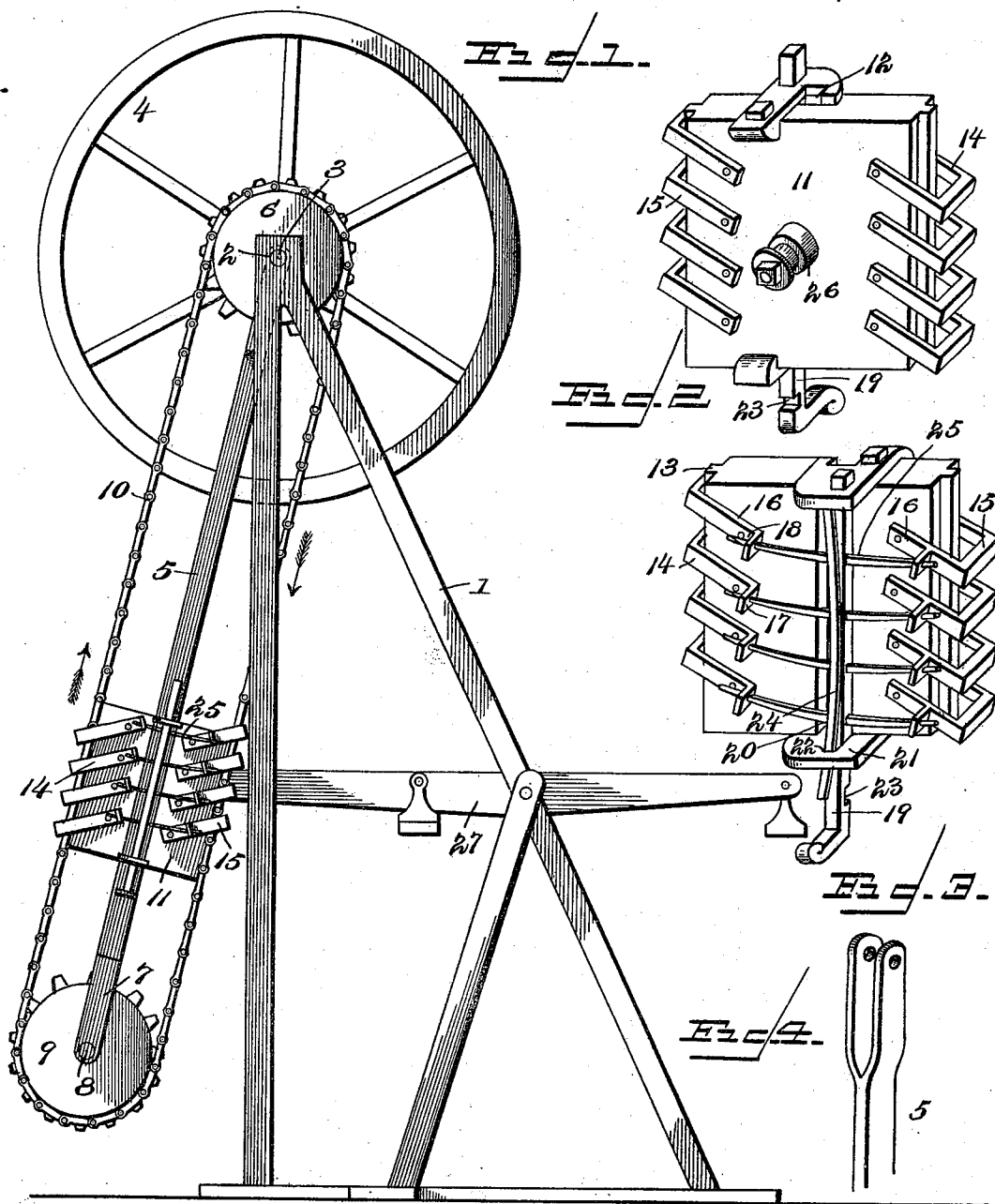


(No Model.)

H. R. GRATIOT.
POWER CONVERTING MACHINE.

No. 507,583.

Patented Oct. 31, 1893.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

HENRY R. GRATIOT, OF GRATIOT, WISCONSIN.

POWER-CONVERTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 507,583, dated October 31, 1893.

Application filed November 6, 1891. Serial No. 411,119. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. GRATIOT, a citizen of the United States, residing at Gratiot, in the county of Lafayette and State of Wisconsin, have invented a new and useful Power-Converting Machine, of which the following is a specification.

My invention relates to a mechanical movement, and has for its object to provide means for converting a reciprocatory or oscillatory movement into a rotary movement; and, furthermore, to provide means whereby the direction of the rotary movement may be reversed without reference to the derivative motion.

Further objects and advantages of my invention will appear in the following description and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings—Figure 1 is a side view of a mechanism embodying my invention. Fig. 2 is a perspective view in detail of the sliding clutch. Fig. 3 is a similar view of the same showing the opposite side thereof. Fig. 4 is a detail view to show the construction and connection of the upper end of the spring guide.

1 designates a framework provided at its upper end with bearings 2 in which is mounted a shaft 3 carrying a driving wheel 4, and 5 designates a guide bar which is pivotally connected at its upper end to the shaft 3 and is bifurcated to pass upon opposite sides of the interposed sprocket wheel 6 which is fixed securely to the shaft 3. The lower end of the guide bar is similarly bifurcated, and between the arms 7 thereof there is arranged a transverse spindle 8 bearing a fixed sprocket wheel 9 similar to the wheel 6. Around these sprocket wheels extends a chain 10.

Slidably mounted upon the guide bar, which, as will be understood, is free at its lower end for oscillation, is a clutch block 11 provided with a guide 12 for the reception of the bar 5, and provided at its side edges with ribs 13 to engage the inner surfaces of the sides of the chain 10. Pivotally connected to the clutch block at the opposite side edges thereof are series, 14 and 15, of clutch links which are looped in shape and have their parallel arms 16 pivotally connected to the opposite plane surfaces of the block. The looped ends of these links are adapted to engage the outer

surfaces of the sides of the chain, and in operation, as shown in the drawings, the oppositely-disposed series of links are arranged in reversed positions whereby the links at one edge of the clutch block are inclined upwardly toward their free ends and those at the opposite edge are inclined downwardly toward their free ends.

In order to hold the clutch links in the above described reversed positions, I employ the following means: The links are provided at one side of the block with perforated ears 17, the ears upon the links 14 being arranged upon extensions 18 of the arms of the links, and the ears upon the links 15 being arranged upon the arms thereof between the pivotal points and their free extremities. 19 represents a slidable reversing bar mounted in a groove 20 in the surface of the block and held in place by guides 21 secured to the upper and lower edges of the same. The opening 22 of the lower guide 21 is elongated to permit of movement of the lower end of the reversing bar toward and from the plane of the clutch block. The reversing bar is provided upon its inner side or toward the clutch block and near its lower end with spaced notches 23, either of which is adapted to be engaged with the inner end of the slot 22, and fixed to the outer surface of the reversing bar and passing at its lower end through said slot 22 is a retaining spring 24 whereby the reversing bar is held in such position that either of the notches may be locked to the inner end of the slot. Fixed to and carried by the reversing bar is a series of actuating springs 25 which engage at their free extremities in the perforated ears 17 of the clutch links.

The clutch block is provided upon the opposite side from the reversing mechanism with a perpendicular spindle 26 to which is connected the adjacent end of the oscillatory lever 27.

This being the construction of my improved mechanism, the operation thereof, briefly stated, is as follows: The lever 27 being oscillated, motion is communicated to the clutch block and the latter is reciprocated upon the guide bar 5, the latter accommodating itself in position to the distance from the center of movement of the lever. As the clutch block ascends the clutch links 14, as shown in Fig.

1, engage the adjacent side of the chain and as said block descends the links 15 engage the opposite side of the chain, thus producing a movement of the chain in the direction indicated by the arrow in Fig. 1. To reverse the direction of movement of the chain the lower end of the reversing lever 19 is drawn outwardly or from the plane of the clutch block to disengage its notch from the inner end of the slot 22, and then the reversing bar is moved longitudinally to engage the other notch with the inner end of the slot, thus throwing the clutch links from the position shown in Fig. 1 to the position shown in Fig. 3.

Various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit of my invention or sacrificing any of the advantages thereof.

Having described my invention, what I claim is—

1. In a device of the class described, the combination with a lever, of a spring guide bar pivotally connected at one end to a driving shaft, twin sprocket wheels arranged, respectively, upon the driving shaft and upon a corresponding spindle at the free end of the guide bar, a chain traveling over said sprocket wheels, and a clutch block slidably mounted upon the guide bar and pivotally connected to the lever, said clutch block being provided with oppositely-disposed clutch links to engage opposite sides of said chain, substantially as specified.

2. The combination with a lever, of a driving shaft, a fixed sprocket wheel carried by said shaft, a swinging guide bar pivotally connected to the shaft and carrying at its free end a similar sprocket wheel, a chain traveling over said sprocket wheels, and a clutch block slidably mounted upon the guide bar and pivotally connected to the lever, said

clutch block being provided with oppositely positioned clutch links, and means for reversing the positions of said links, substantially as specified.

3. The combination with a lever, a driving shaft carrying a sprocket wheel, a guide bar pivotally connected to said shaft and carrying a sprocket wheel, and a chain traveling over said sprocket wheels, of a clutch block slidably mounted upon the guide bar, loop-shaped clutch links pivotally connected to the clutch block at opposite edges thereof, a reversing bar slidably mounted upon the clutch block, actuating springs carried by the reversing bar and operatively connected to the clutch links, and means for locking the reversing bar in its set positions, substantially as specified.

4. The combination, with a lever, a driving shaft carrying a sprocket wheel, a guide bar pivotally connected to said shaft and carrying a similar sprocket wheel, and a chain traveling over said sprocket wheels, of a clutch block slidably mounted upon the guide bar and provided at its opposite side edges with ribs to engage the inner surfaces of the chain, loop-shaped clutch links pivotally connected to the clutch block near the opposite edges thereof and engaging the outer surfaces of the chain, a slidable reversing bar mounted upon the clutch block and provided with locking devices, and actuating springs carried by the reversing bar and operatively connected to the clutch links by means of ears carried by the arms of said links and arranged, respectively, upon opposite sides of the pivotal points of the links, substantially as specified.

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Witnesses:

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