J. S. LAMAR.

Device for Converting Motion.

No. 218,887. Patented Aug. 26, 1879.

Fig. 1.

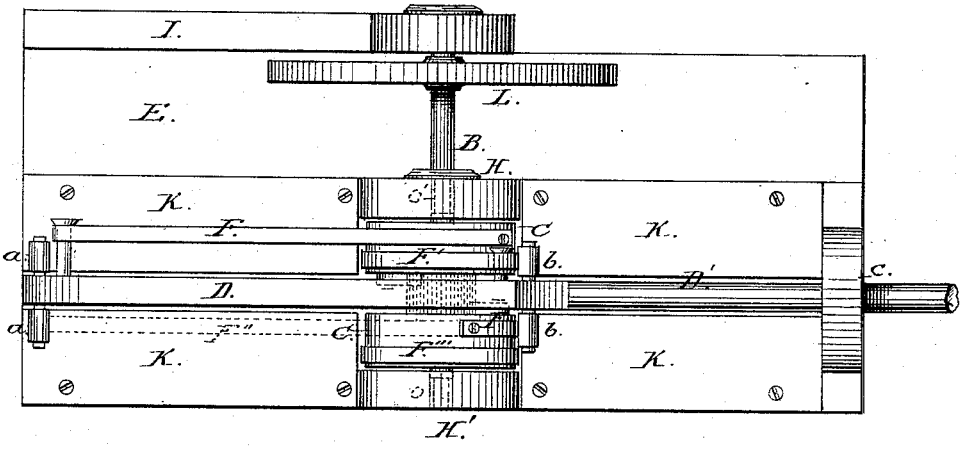


Fig. 2.

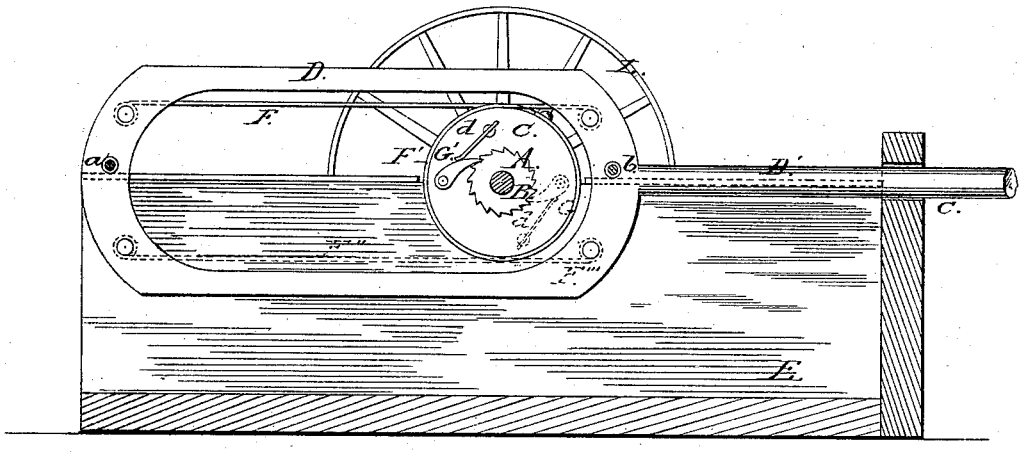
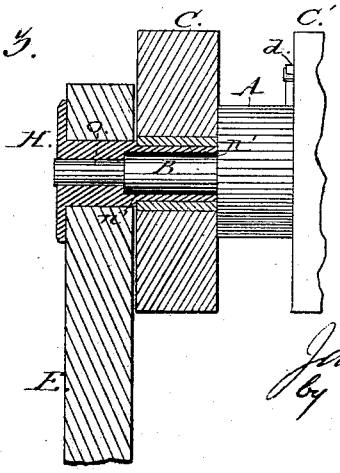


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE

JAMES S. LAMAR, OF AUGUSTA, GEORGIA.

IMPROVEMENT IN DEVICES FOR CONVERTING MOTION.

Specification forming part of Letters Patent No. **218,887**, dated August 26, 1879; application filed July 19, 1879.

To all whom it may concern:

Be it known that I, JAMES S. LAMAR, of Augusta, in the county of Richmond and State of Georgia, have invented certain new and useful Improvements in Machinery for Converting Reciprocating into Rotary Motion; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention is a machine for converting reciprocating into rotary motion, to be applied to any machinery when such conversion is desirable.

It consists of a ratchet-wheel fixed to a driving-shaft between two loose pulleys, which have bands attached to them, and to a reciprocating piston, said loose pulleys being rotated back and forth by the movement of the piston to carry certain pawls, which alternately engage the teeth of said ratchet-wheel, to give it and the shaft on which it is keyed a continuous rotary movement, as will be hereinafter set forth.

It consists, also, in combination with said loose pulleys, of certain thimble journal-bearings for said pulleys and driving-shaft, which will be fully set forth hereinafter.

In my drawings, Figure 1 is a plan view of the device. Fig. 2 is a vertical longitudinal section. Fig. 3 is a detail of the thimble-bearings.

Similar reference-letters denote like parts in all of the figures.

Referring to drawings, A is the ratchet-wheel, keyed or otherwise fixed to a driving-shaft, B. On either side of the ratchet-wheel A are pulleys C C′, provided with suitable journal-bearings, which will be described hereinafter.

A piston, D, provided with bearing-pins *a b* and a journal-bearing, *c*, is arranged to move horizontally in a frame, E. This piston D is in the form of a yoke or elongated frame, adapted to play outside of these loose pulleys, and has attached to it a piston-rod, D′. The piston D is connected to the two loose pulleys C C′ by belts or bands F F′ F″ F‴, which are wound and unwound from said pulleys as the said piston reciprocates.

To the inside faces of loose pulleys C C′ are pivoted pawls G G′, which are kept bearing upon the teeth of the ratchet-wheel A by springs *d*, also fixed to the inside faces of the loose pulleys.

In the frame E are provided journal-boxes to receive thimbles H H′, which are turned externally to receive the loose pulleys C C′, and bored out, as shown in drawings, to serve as bearings to the shaft B. The shaft B has a third bearing, which is formed in an upright piece, I, extending from the side of the frame E.

Horizontal plates or rails K are secured to two of the uprights of the frame E, to serve as bearings to bearing-pins *a b*, which, to reduce friction, may be provided with ordinary anti-friction rollers.

A balance-wheel or pulley, L, is fixed on shaft B, to serve as a driving-pulley.

In operating my device, the piston is reciprocated to and fro to rotate the pulleys C C′ and carry the pawls G G′. When a forward movement is given to said piston the pawl G engages with the teeth of the ratchet-wheel to carry the shaft, while the pawl G′ on the opposite side slips over the teeth of said ratchet freely. When the piston returns, the pawl G′ engages the teeth of the ratchet, to continue the movement of the said driving-shaft, while the pawl G slips over the said ratchet-wheel freely.

An alternate engagement and disengagement is kept up between the loose pulleys and ratchet-wheel through the pawls G G′ while the piston is moved, giving a regular and even rotary movement to the driving-shaft.

The shaft B, it will be observed, is reduced in size at the end O and at the point O′, to form journals to bear in the boxes provided for them in the thimbles; but the said thimbles have inner offsets, N′, which render them larger within immediately under the loose pulleys. By this form I relieve the shaft from bearing against said thimble, except at O O′.

I am aware that pawls and ratchet-wheels have been employed in converting reciprocat-

ing into rotary motion to avoid dead-points in machinery, and such I do not claim, broadly; but

What I do claim as new, and desire to secure by Letters Patent, is—

The ratchet-wheel A, fixed to shaft B, and loose pulleys C C′, having pawls G G′ pivoted thereto, in combination with piston D, provided with bearing-pins *a b*, adapted to slide on rails or bearings *k*, belts F F′ F″ F‴, which unite said piston with loose pulleys C C′, and thimble H H′, adapted to form bearings externally for said loose pulleys, and bearings at O O′ for the said shaft B, all arranged as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES S. LAMAR.

Witnesses:

WM. HELMICK,

WM. W. DUNGAN.