(No Model.)

A. C. & C. MONGER.

DEVICE FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

No. 337,973. Patented Mar. 16, 1886.

Fig. 1.

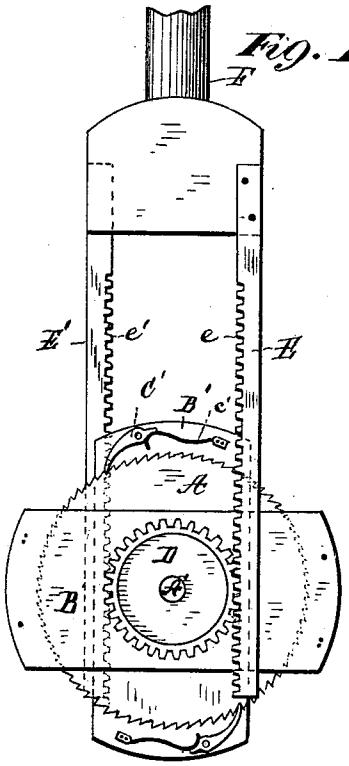


Fig. 2.

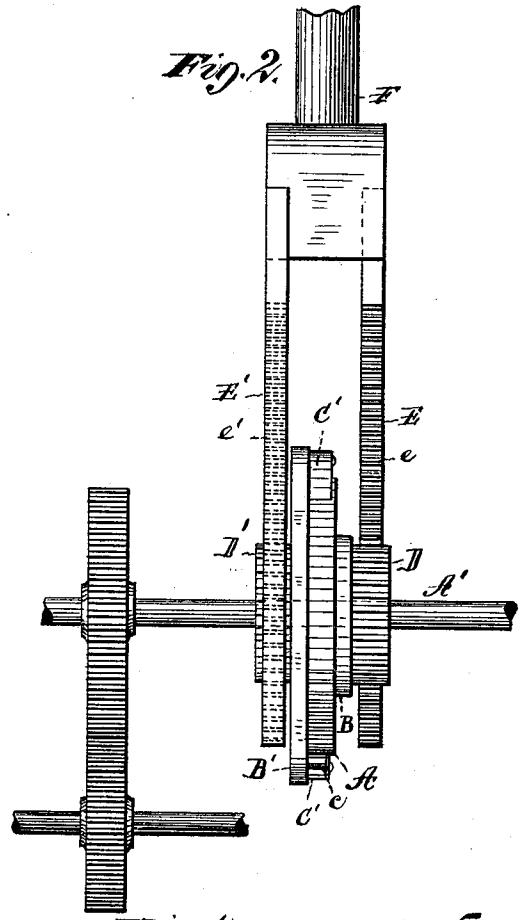


Fig. 3.

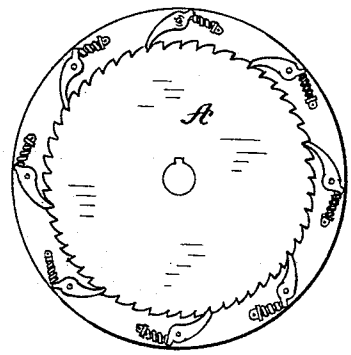


Fig. 4.

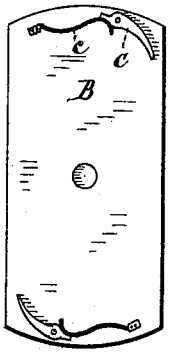
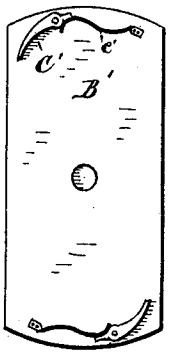


Fig. 5.



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UNITED STATES PATENT OFFICE.

AUGUSTUS C. MONGER AND CLIFTEN MONGER, OF AMBOY, ILLINOIS.

DEVICE FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

SPECIFICATION forming part of Letters Patent No. 337,973, dated March 16, 1886.

Application filed December 8, 1885. Serial No. 185,046. (No model.)

To all whom it may concern:

Be it known that we, AUGUSTUS C. MONGER and CLIFTEN MONGER, citizens of the United States, residents of Amboy, in the county of Lee and State of Illinois, have jointly invented a new and useful Device for Converting Reciprocating into Rotary Motion; and we hereby declare the following to be a full and clear description thereof.

The object of this invention is to convert reciprocating motion into rotary motion without any dead-center and the loss of power resultant from a dead-center.

The nature of the invention consists in constructing the driving-wheel which actuates the driving-shaft in the form of a ratchet-wheel, the teeth of which are alternately engaged by pawls attached to vibrating frames placed on the opposite sides of the said ratchet-wheel, and the said vibrating frames actuated by cog-wheels attached to their faces and operated by cogged racks moving in rectilinear lines in a reciprocating motion. These cogged racks may be attached directly to a piston-rod, as of a steam-engine, or operated from the reciprocating end of a walking-beam, as is shown in the drawings.

The invention will be readily understood by reference to the accompanying drawings, of which Figure 1 is a side elevation of the improved device. Fig. 2 is a transverse sectional elevation of the same. Fig. 3 is an elevational view of a modification of the vibrating or rocking frame which carries the pawls. Figs. 4 and 5 are respectively elevations of the interior faces of the two vibrating or rocking frames, and showing the pawls and their springs secured thereto.

The actuating-wheel A, which is secured to the driving-shaft A′ and rotates it, is made in the form of a ratchet-wheel, and it is rotated forward by means of two vibrating or rocking frames, B B′, which are respectively placed adjacent to and parallel with the opposite faces of the said driving-wheel A, and they are each centered by and fulcrumed on the driving-shaft A′, which passes transversely through them. For convenience the said rocking frames B B′ are placed with their axes in opposite directions—that is, the axis of one of them is placed in a horizontal plane, and the axis of the other is a vertical plane, as shown in Fig. 1—thereby providing adequate room on the face of the ratchet-wheel for the operation of the two distinct sets of pawls without the interference of one set with the operation of the other. These rocking frames may, however, be made in the form of disks, as shown in Fig. 3, in which case the pawls must be set or adjusted each to the other, so as to allow for the full working of each.

The vibrating frame B is provided with a set of pawls, C, which are pivoted to its inner face and arranged to engage with the teeth of the ratchet A, and these pawls each have an actuating-spring, *c*, which is adjusted so as to habitually throw the said pawls into gear with the teeth of the ratchet A. In like manner the rocking or vibrating frame B′ is provided with pawls C′ and actuating-springs *c*′. There are cogged wheels D D′ secured, respectively, to the outer faces of the vibrating or rocking frames B B′, as shown in Figs. 1 and 2. The said rocking frames are moved by and with the said cog-wheels in a rocking or vibrating movement in the following manner: There are sliding frames E E′, provided with cogged racks *e e*′ on their working-faces, which said cogged racks gear into and operate the said cogged wheels as the racks are moved forward and backward in a reciprocating movement. The effect of this reciprocating movement of the cogged racks and the cogged wheels geared into them, and the vibrating or rocking movement of the before-described rocking frames, which are secured fixedly to the said cog-wheels, so as to be moved by them, is to bring one set of pawls, C or C′, constantly into action against the serrations or teeth of the ratchet-wheel, (one of the said racks being on one side of the driving-shaft and the other one diametrically opposite it,) and thus one set of the said pawls are engaged with the teeth of the driving-wheel when the frame E E′ is moved in one direction, and the other set of pawls when the said frame is moved in the opposite direction; consequently the continuous forward and backward or reciprocating movement of the frame E E′ is transmitted to the wheel A and its shaft A′ in a continuous rotary movement.

The pawls, when there are several of them in a set, as there evidently may be, are dis-

posed so that at least one of each set will be ready to engage a tooth of the wheel A in almost any position in which it may chance to be, and so lost motion is readily avoided.

The cogged racks E E′ may be attached to the piston-rod of an engine or to a walking-beam, F, as shown in the drawings.

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

1. A device for converting reciprocating into rotary motion, consisting of a ratchet-wheel securely attached to the driving-shaft, and actuated into a continuous rotary movement by means of actuating-pawls pivoted to the adjacent faces of two vibrating or rocking frames placed on opposite sides of the driving-wheel, and pivoted on its shaft and actuated by reciprocating frames or cogged racks placed on diametrically-opposite sides of the driving-shaft, and arranged to gear into cogged wheels securely fixed, respectively, to the faces of the rocking frames, substantially as shown and described.

2. A continuous rotary movement imparted to a ratchet-wheel by means of the engagement therewith of two sets of pawls attached to vibrating arms or levers moved in opposite directions in alternate times, so as to impart a continuous rotary movement to the wheel, substantially as shown and set forth.

3. The rotary ratchet-wheel A, the rocking frames B B′, with their respective pawls C C′ and cogged wheels D D′, and the cogged racks E *e* and E′ *e*′, combined and arranged as described and set forth.

In witness whereof we hereunto set our hands in presence of two witnesses.

AUGUSTUS C. MONGER.
CLIFTEN MONGER.

Witnesses:
P. M. JAMES,
FRANK C. VAUGHAN.