

(No Model.)

J. W. JAMES.
DEVICE FOR CONVERTING MOTION.

No. 423,322.

Patented Mar. 11, 1890.

Fig. 1.

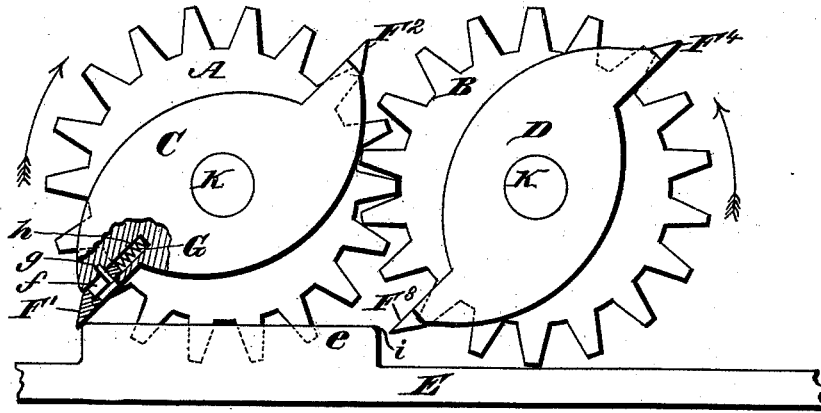


Fig. 2. A.

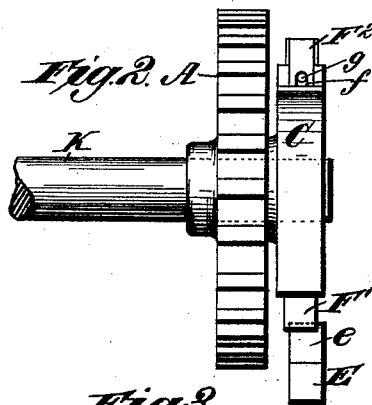
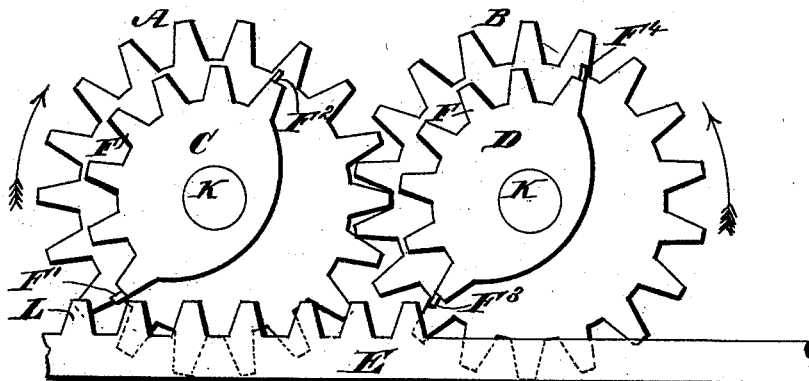


Fig. 3.



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DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 423,322, dated March 11, 1890.

Application filed July 25, 1889. Serial No. 318,611. (No model.)

To all whom it may concern:

Be it known that I, JACK W. JAMES, a citizen of the United States, residing at Cuba, in the county of Shelby and State of Tennessee, have invented new and useful Improvements in Devices for Converting Motion, of which the following is a specification.

My invention relates to an improved device for converting motion; and it consists in the combination of two cog-wheels of equal size and provided with the same number of teeth, each cog-wheel having a cam cast on or otherwise secured to one side, a number of yielding slides projecting from suitable points on the said cams, and a reciprocating rod adapted to engage said slides and thereby rotate the cams and attached cog-wheels, thus converting reciprocating motion into rotary motion, or by the same means the rotary motion of the cog-wheels may be converted into reciprocating motion.

In the annexed drawings, illustrating the invention, Figure 1 is a side elevation, partly in section, of my improved devices for converting motion. Fig. 2 is an end elevation of the same. Fig. 3 is a side view of a modification.

The letters A and B designate cog-wheels of equal size and having the same number of teeth.

On one side of the wheel A is a cam C, and on the corresponding side of the wheel B is a cam D of the same form and size. These cams C and D are cast on or otherwise rigidly secured to the cog-wheels, and are reversely placed, as shown in Fig. 1—that is to say, their acting faces are located toward each other. Adjacent to the acting faces of the cams C D is a reciprocating rod E, having an elongated lug or projection *e* on one side.

In order that the points of the cams C D may act on or be acted upon by the lug *e*, it is necessary that they should be capable of being projected into its path. To this end the points of the cams are recessed to receive yielding steel slides F' F^2 F^3 F^4 , that are normally projected from the ends of the cams by means of spiral springs G, located in the rear or inner ends of the recesses. The slides may be provided with slots *f* to engage pins *g*, whereby they are prevented from dropping out of the recesses *h*, or they may be attached

to the cams in any other suitable way. As shown in the drawings, the reciprocating rod E, which we will suppose is connected with a prime mover, has just reached its extreme limit to the left, and by contact of the lug *e* with the slide F' in the lower end of the cam C has caused the cog-wheel A to revolve in the direction of the arrow, thereby revolving the cog-wheel B in the opposite direction. While the rod E is traveling to the left the lower end of the cam D just clears the lug *e* near the point *i*, and by pressure of the slide F^3 thereon causes said slide to be pushed back into its recess; but the moment the cam D passes the lug *e* the slide F^3 is pushed out by its spring, and as the rod E passes to the right the lug *e* catches against said slide F^3 , and thereby causes the cog-wheel B to continue its rotation in the direction of the arrow. When the rod E reaches its limit to the right, the slide F^2 of the cam C will be in position to be acted on by the lug *e* on the return-stroke of the rod E to the left, and in like manner the slide F^4 of the cam D will be acted on by the lug *e* on the next movement of the rod to the right. A continuous rotary motion is thus given to the cog-wheels A B by the reciprocating rod E without any liability of stoppage of the wheels on a dead-center. So, likewise, if rotary motion is first imparted to the cog-wheels A B, they will transmit reciprocating motion to the rod E.

The cog-wheels A B and attached cams C D are mounted on shafts K K, with which the machinery to be driven can be suitably connected, or the reciprocating rod E can be connected by suitable means with the machinery to be driven. The rod E may be supported in appropriate guides. (Not shown.) If desired, the cams C and D may be each provided with three or more yielding slides, instead of only two, thereby gaining greater power.

In Fig. 3 I have shown a modification in which the cams C D occupy one-half one side of the cog-wheels A B, respectively, and are provided with cogs F, which correspond with cogs L on the reciprocating rod E. When the rod E is moved to and fro, the cogs L will engage the cogs F, and so produce a steady and uniform motion of the cog-wheels. The slides F' F^2 F^3 F^4 are employed either with or

without the cogs F to catch the rod E on its return motion.

Although I have described the wheels A B as being cogged, it will be understood that, if preferred, they may be friction-wheels, and the cams, instead of being provided with cogs, may be friction-cams, thereby saving all lost motion of the cogs.

What I claim as my invention is—

10 1. In a device for converting motion, the combination, with a reciprocating rod, of two cog-wheels and cams secured to the sides of said cog-wheels and provided with yielding slides to engage the reciprocating rod, substantially as described.

15 2. The combination of the cog-wheels A B, the cams C D, having slides F' F² and F³ F⁴, provided with springs G, and the reciprocating

rod E, having a lug e to engage said slides, substantially as described. 20

3. The combination of the wheels A B, the cams C D, having slides F' F² F³ F⁴, and the reciprocating rod E, substantially as described.

4. The combination of the cogged wheels A B, the cams C D, having projecting slides F' F² F³ F⁴, and the reciprocating rod E, adapted to engage said cams, substantially as described. 25

In testimony whereof I have affixed my signature in presence of two witnesses. 30

JACK W. JAMES.

Witnesses:

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S. R. SIMMONS.