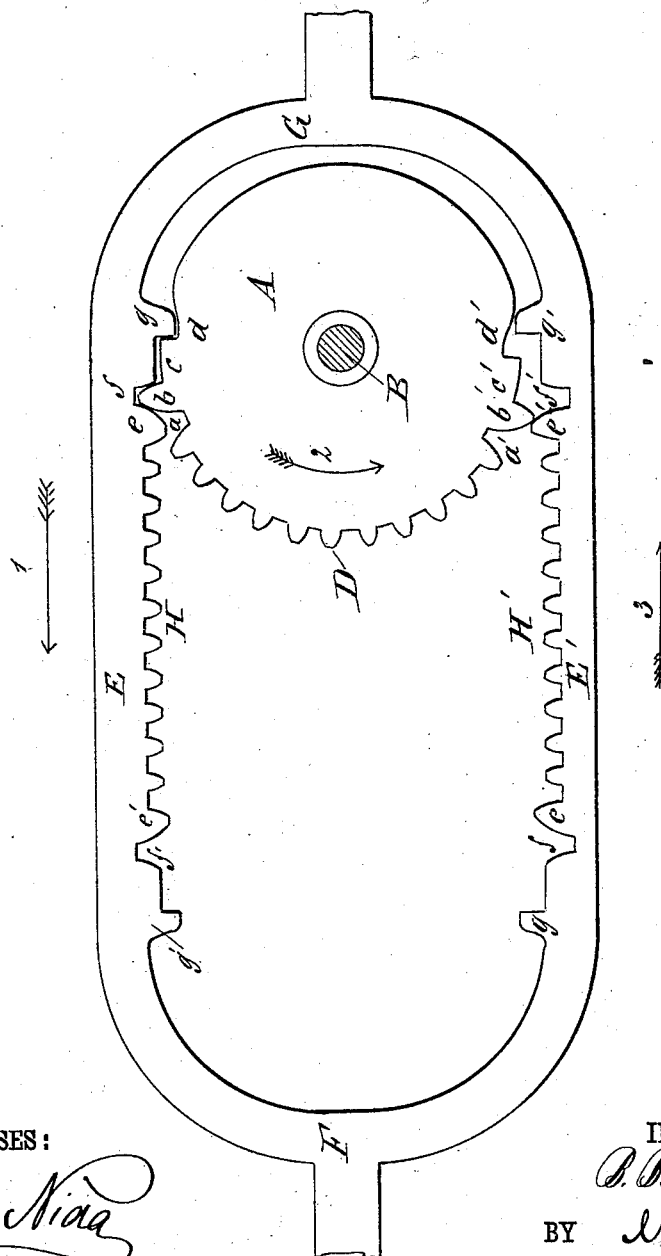


(No Model.)

B. B. POWELL.  
MECHANICAL MOVEMENT.

No. 265,632.

Patented Oct. 10, 1882.



**WITNESSES :**

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# UNITED STATES PATENT OFFICE.

BENJAMIN B. POWELL, OF PETOSKEY, MICHIGAN.

## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 265,632, dated October 10, 1882.

Application filed March 15, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN B. POWELL, of Petoskey, in the county of Emmett and State of Michigan, have invented a new and Improved Mechanical Movement, of which the following is a full, clear, and exact description.

This invention relates to the class of mechanical movements used to convert rectilinear reciprocating motion into continuous rotary motion; and it consists of a segmental cog-wheel having a regular series of epicycloidal teeth with a large tooth and a notch at each end of the series; also, in two racks arranged parallel with each other and connected rigidly by end pieces and adapted to engage the segmental cog-wheel in alternation.

Referring to the Drawing, A is a segmental cog-wheel, mounted on the shaft B, and having a series, D, of epicycloidal teeth covering about one-third of its periphery. At opposite ends of this series of teeth there are spaces *a a'* double the width of the spaces between the teeth of the series D, and adjoining these spaces there are teeth *b b'* of double the size of the teeth of the series D. Beyond and adjoining the large teeth *b b'* there are plain spaces *c c'*, beyond which there are notches *d d'*.

The racks E E' are arranged with their toothed sides facing each other, and their ends are connected by the curved end pieces, F G, one of which is secured to the piston-rod of an engine or other reciprocating body, the other being connected with a guide-rod. Each rack is a counterpart of the segmental gear of the wheel A, the teeth H H' corresponding with the teeth D of the wheel A, the large teeth *e e'* fitting the spaces *a a'*, the spaces *f f'* receiv-

ing the large teeth *b b'*, and the notches *d d'* receiving the lugs *g g'*. The double rack is represented in the drawing as having nearly completed its stroke in the direction indicated by the arrow 1, moving the wheel A in the direction shown by arrow 2. The engagement of the lug *g* with the shoulder formed by the notch *d* completes the half-revolution of the wheel A and brings the large tooth *b'* into engagement with the large tooth *e'* of the rack E' when the motion of the double rack is to be reversed, so that it will move in the direction of arrow 3. The tooth *b'* of the wheel A will then be engaged by the tooth *e'* of the rack E', and the teeth D will follow, being engaged by the teeth H' of the rack E'. At the opposite end of the double rack the same operation is repeated.

It will be observed that in this mechanical movement there are no dead-centers, the reciprocation of the rack in either direction and in any position relative to the segmental gear-wheel producing rotary motion in the wheel.

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

In a mechanical movement, a segmental wheel having at opposite ends of a series of epicycloidal teeth large spaces *a a'*, large teeth *b b'*, plain surfaces *c c'*, and notches *d d'*, in combination with a double rack having corresponding teeth and spaces, and lugs *g g'*, substantially as herein specified.

BENJAMIN B. POWELL.

Witnesses:

W. E. WALLACE,  
S. H. WALLIS.