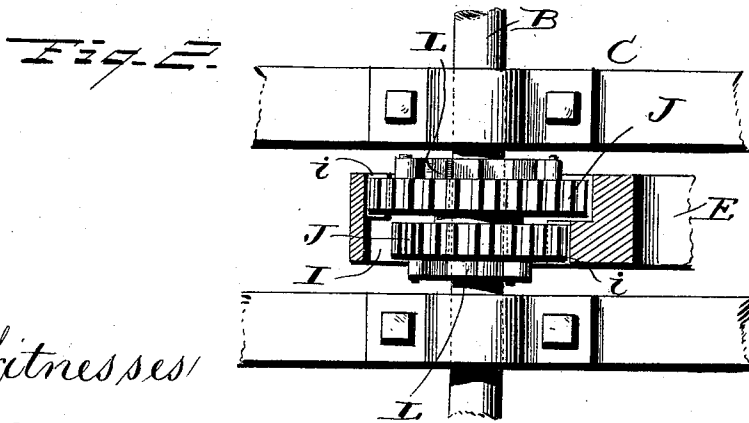
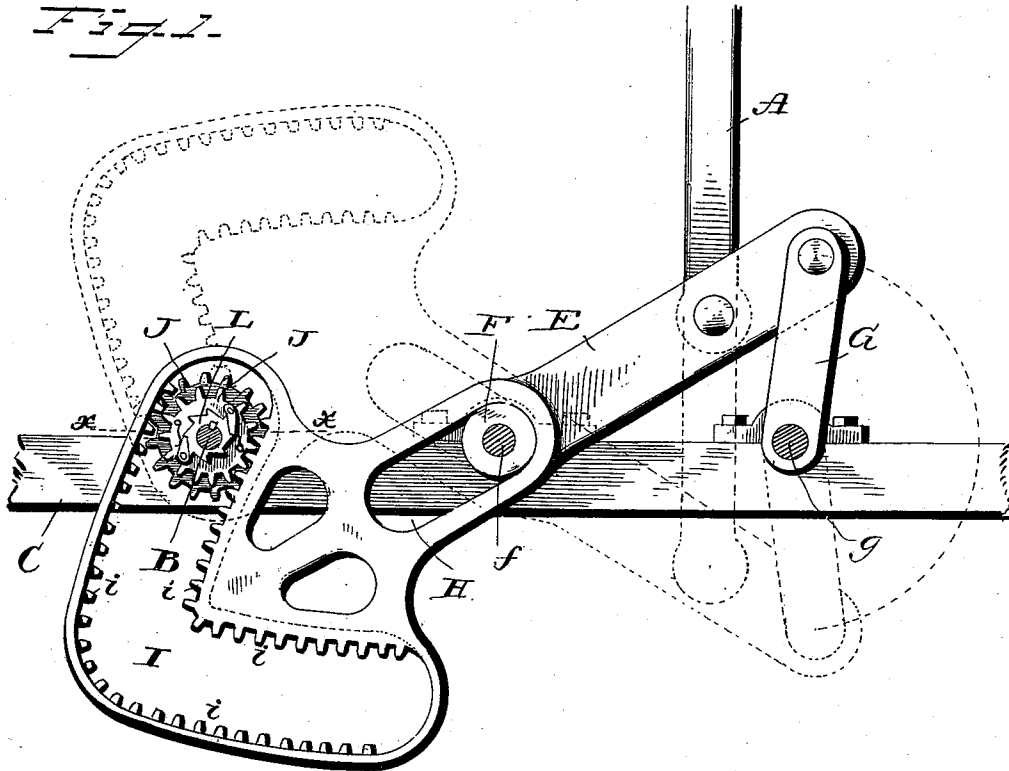


(No Model.)

J. C. BUTLER.  
MECHANICAL MOVEMENT.

No. 521,780.

Patented June 26, 1894.



Witnesses

*G. J. Williamson,*  
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# UNITED STATES PATENT OFFICE.

JOSEPH C. BUTLER, OF NEW PROVIDENCE, IOWA.

## MECHANICAL MOVEMENT.

**SPECIFICATION** forming part of Letters Patent No. 521,780, dated June 26, 1894.

Application filed September 23, 1893. Serial No. 486,341. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH C. BUTLER, a citizen of the United States, residing at New Providence, in the county of Hardin and State of Iowa, have invented certain new and useful Improvements in Mechanical Movements; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention relates to mechanical movements for converting reciprocating motion into continuous rotary motion, and it has for its object the provision of simple and efficient mechanism for this purpose and to this end said invention consists in the device having the construction hereinafter specified and claimed.

In the annexed drawings, Figure 1 is a side view of my mechanism; Fig. 2 a section on the line  $x-x$  of Fig. 1.

Referring to the drawings by letter, A designates the reciprocating part, in the form of a rod or bar, and B the shaft to which it is desired to impart a continuous rotary motion from the former, said shaft being journaled in bearings on a suitable frame C. The lower end of the bar A is pivotally connected to a rocking bar or lever E fulcrumed or pivoted upon a roller F journaled on a rod or shaft  $f$  that is mounted on the frame C. At its end adjacent to the point of connection of the bar A, the lever E is pivotally connected to a bar G that is adapted to swing through substantially a half circle on a pivot  $g$  that is also mounted on the frame C. It will be seen that the to and fro movements of the bar A will rock the lever E upon its fulcrum but owing to the connection of the lever to the link or bar G said lever will have a longitudinal movement as well as a rocking motion. To permit this longitudinal movement the lever has a slot H at its center that allows play over the fulcrum roller F. At its end away from the point of connection of the bar A the lever E has a curved slot I whose opposite sides are provided with gear teeth  $i, i$ ,

the teeth of one side being in a vertical plane to one side of those of the other so as to enable each to drive a gear wheel J upon the shaft B without interference with the other. The two gear wheels are mounted loosely on the shaft and each is adapted to be clutched thereto, when revolved in one direction, by its own pawl and ratchet mechanism L of well known construction comprising a ratchet wheel keyed to the shaft and pawls carried by the gear wheel. Said mechanisms L are arranged to operate reversely so that one wheel J will be clutched to the shaft on the downward movement of the toothed or rack bar end of the lever E, and the other wheel J clutched thereto on the reverse movement.

Each gear wheel J is given a diameter proportioned to the radius of the rack bar with which it meshes so that a uniform speed of rotation will be imparted to the shaft B.

It will of course be evident that the rack bars cannot be curved in arcs of circles because of the compound motion of the lever E. Their curves are the resultants of such motion, and it necessarily follows that for a given movement of the bar A they will be longer than they would if they were arcs of circles and accordingly impart a greater number of revolutions to the shaft than they would as arcs of circles.

By varying the point of connection of the bar A to the lever E relative to the fulcrum of the latter the speed and power transmitted to the shaft by said lever can be varied.

Having thus described my invention, what I claim is—

1. In a mechanical movement, in combination, a reciprocating part, a shaft to be rotated thereby, gear wheels loosely mounted on said shaft, means to clutch them thereto alternately, a lever having curved rack bars meshing with said wheels and to which said reciprocating part is connected, a pivot for said lever away from said shaft and means to move the lever longitudinally as it is vibrated by said part, substantially as specified.

2. In a mechanical movement, in combination, a reciprocating part a shaft to be rotated thereby, gear wheels loosely mounted

on said shaft, means to clutch them thereto  
alternately, a lever having curved rack bars  
at one end meshing with said wheels and con-  
5 nected to said reciprocating part near its other  
end, a pivot for the lever between its ends  
over which it is adapted to slide, and a piv-  
oted bar pivotally connected to the lever, sub-  
stantially as specified.

In testimony that I claim the above I have  
hereunto subscribed my name in the presence  
of two witnesses.

JOSEPH C. BUTLER.

Witnesses:

NORTH MILLER,  
H. F. JOHNSON.