(No Model.)

F. L. PALMER.

MECHANICAL MOVEMENT.

No. 304,549. Patented Sept. 2, 1884.

Fig. 2.

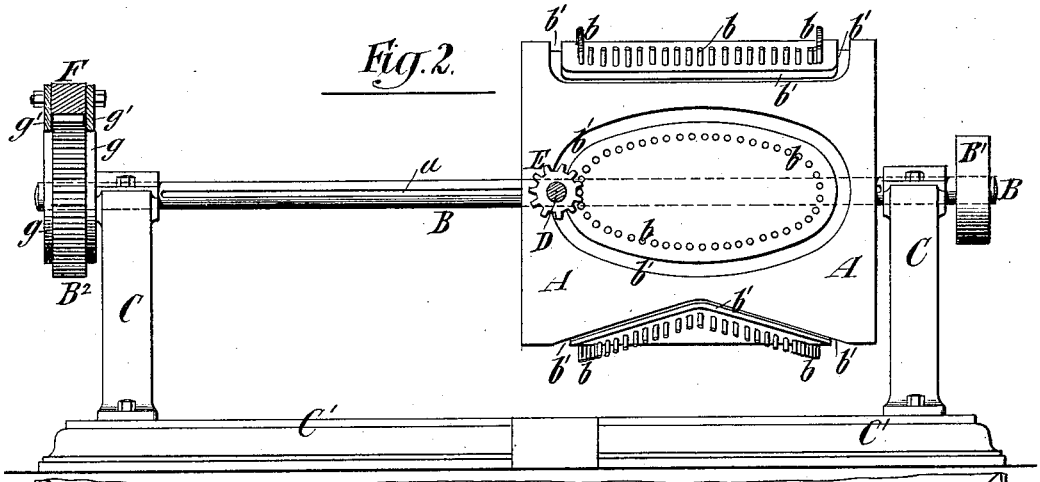


Fig. 1.

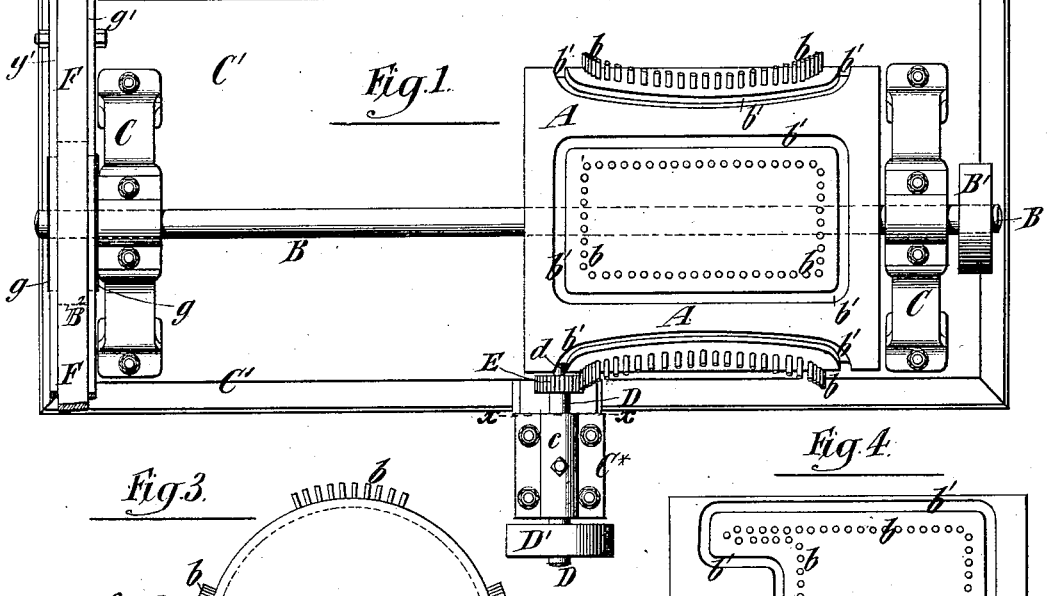


Fig. 3.

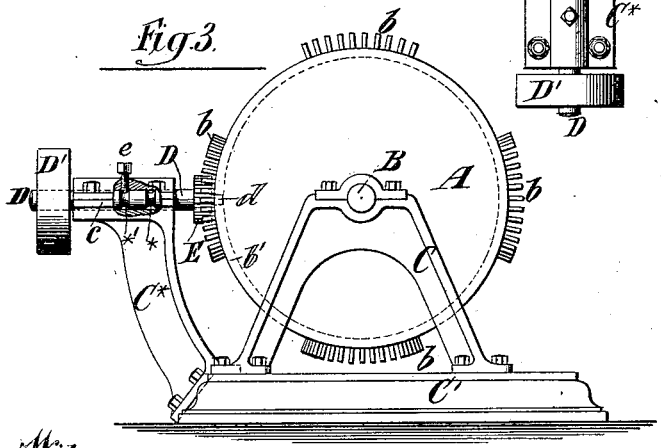
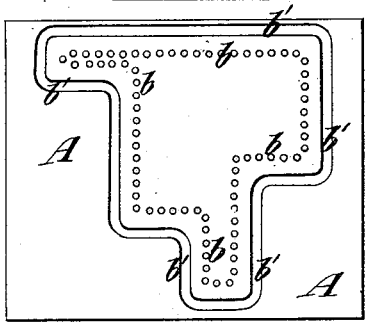


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANK L. PALMER, OF NEW LONDON, CONNECTICUT.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 304,549, dated September 2, 1884.

Application filed June 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. PALMER, of the city of New London, in the county of New London and State of Connecticut, have invented a new and useful Mechanical Movement, of which the following is a specification.

The object of my invention is to enable movement at uniform speed and in any predetermined direction to be imparted from a fixed point to a body capable of movement in planes transverse to each; also, to convert a uniform rotary motion continuous in one direction into a variable continuous or intermittent rotary motion in either direction.

My new movement may be employed for various useful purposes, and particularly for changing the relative position of the fabric and needle in a quilting-machine, as shown in my application for United States Letters Patent filed June 13, 1884, and of which the serial number is 134,735.

The invention consists in the combination, with a body capable of movement in planes transverse to each other, and bearing upon its surface a pattern rack or track, of a positively-operating engaging device occupying a fixed position and acting upon said rack or track, whereby there is imparted to the movable body a movement in a direction conforming to the shape of the pattern rack or track and at a uniform speed throughout its extent. I also provide a groove or guide adjacent to and at a uniform distance from a pattern rack or track, and a pin or tracker connected with the positively-operating engaging device enters or engages said groove or guide and holds the rack or track in engagement with the positively-operating engaging device.

The invention also consists in the combination, with a body movable, as described, and provided with a pattern rack or track upon its surface, of a positively-rotating shaft supported in a fixed bearing, and a pinion or wheel on said shaft engaging with the pattern rack or track, and thereby imparting movement to the body carrying said rack or track.

The invention also consists in the combination, with a cylinder capable of rotation and horizontal movement, and having a pattern rack or track upon its surface, of a positively-rotating wheel or pinion or other positively-operating engaging device occupying a fixed position and engaging with the rack or track to move the cylinder.

In the accompanying drawings, Figure 1 is a plan of a mechanism embodying my invention, Fig. 2 is a side elevation and section on the line *x x*, Fig. 1. Fig. 3 is an end view, and Fig. 4 is a side view, of a cylinder bearing a rack or track different in form from that shown in Figs. 1 and 2.

Similar letters of reference designate corresponding parts in all the figures.

A designates a cylinder, which is supported upon a shaft, B, mounted in suitable bearings in standards C, erected on a bed-plate, C′. The cylinder is locked to the shaft B by a spline or feather and a groove, *a*, so as to turn therewith, but is capable of sliding lengthwise thereon. The cylinder therefore is a body capable of movement in planes transverse to each other, and on the surface of which are pattern racks or tracks *b*, here shown as made by driving pins or pegs into the cylinder. The form or design in which the pattern racks or tracks are delineated is purely arbitrary, and represented simply for purpose of illustration.

From the side of the bed-plate C′ a standard or bracket, C*, projects upward and comprises a fixed bearing, *c*, for a shaft, D, to which a positive and uniform rotary motion continuous in one direction may be imparted by means of a belt passing around a pulley, D′. On the shaft D is a pinion, E, which constitutes a positively-operating device engaging with the rack or track *b*, and in order to hold the rack or track in proper relation to the pinion I form a groove or guide, *b′*, adjacent to and at a uniform distance from the rack or track, and at the end of the shaft D is a pin or tracker, *d*, entering said groove or guide.

When it is desired to shift from one rack or track to another, or from one to another part of a rack or track, the shaft D may be moved outward to free its pinion and pin from the rack or track and guide of the cylinder, and when thus shifted the shaft may be held by a set-screw, *e*, in the bearing *c*, entering a groove, *, in the shaft D. When the pinion is brought into operation by moving the shaft

D inward, it may be there held by the point of the screw *e* entering a groove, *', in the shaft, as shown in Fig. 3.

Now, it will be clear from the foregoing description that when the pinion E is acting upon a rack portion, *b*, which is directly circumferential to the cylinder, the latter will have its maximum speed of rotary movement, and no longitudinal movement. When, however, said pinion is acting upon a longitudinal rack portion, the cylinder will be moved lengthwise without rotation. The movement of the cylinder at its maximum speed in one or other of two planes, and the intermediate full-stops or dwells are best understood from Fig. 4, which represents a rack, all portions of which are circumferential or longitudinal of the cylinder.

It will now be understood that the cylinder or body having the pattern rack or track may be moved universally, if the rack be of such a nature as to produce such movement, and notwithstanding its change in direction of movement the traverse of the rack past the pinion will always be at uniform speed.

It will also be seen that by my movement I convert the uniform rotary motion of the shaft D, which is in one direction continuously, into a variable continuous or intermittent rotary motion in either direction. The rotary motion of the cylinder A in either direction will be transmitted to the shaft B, but during any purely longitudinal movement of the cylinder the shaft will dwell. This variable rotation may be transmitted by a pulley, B', on the shaft, or through a spur-wheel, B^2, on the other end of said shaft, which engages with a spur-rack, F. A variable reciprocating movement may thus be imparted to the rack-bar F.

As here shown, the wheel B^2 has cylindric bearing-surfaces *g*, on which rest flanges or side pieces, *g'*, secured to opposite sides of the rack-bar, and whereby the latter is supported.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a body capable of movement in planes transverse to each other, and bearing on its surface a pattern rack or track, of a positively-operating engaging device occupying a fixed position and acting upon said rack or track, substantially as and for the purpose herein described.

2. The combination, with a body capable of movement in planes transverse to each other, and bearing upon its surface a pattern rack or track and an adjacent guide, of a positively-operating engaging device occupying a fixed position and acting upon the rack or track, and a pin or tracker connected with said device and fitting said guide, substantially as herein described.

3. The combination, with a body capable of movement in planes transverse to each other and bearing on its surface a pattern rack or track, of a positively-rotated shaft in a fixed bearing, and a wheel thereon engaging with said rack or track, substantially as herein described.

4. The combination, with a body capable of movement in planes transverse to each other, and having on its surface a pattern-rack, of a positively-rotating shaft in a fixed bearing, and a spur-pinion thereon engaging with said rack, substantially as herein described.

5. The combination, with a cylinder capable of free rotation and longitudinal movement, and bearing on its surface a pattern rack or track, of a positively-operating engaging device occupying a fixed position and acting upon said pattern rack or track, substantially as herein described.

6. The combination, with a cylinder capable of rotation and longitudinal movement, and bearing upon it a pattern rack or track and an adjacent guide, of a positively-operating engaging device occupying a fixed position and acting on the pattern rack or track, and a pin or tracker connected with said engaging device and fitting said guide, substantially as herein described.

7. The combination, with a cylinder capable of rotation and longitudinal movement, and having upon it a pattern rack or track, of a positively-rotating shaft in a fixed bearing, and a wheel thereon engaging the said rack or track, substantially as herein described.

8. The combination, with a cylinder capable of rotation and longitudinal movement, and bearing on it a pattern-rack, of a positively-rotating shaft in a fixed bearing, and a spur-pinion on said shaft engaging with said rack, substantially as herein described.

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