

T. A. Mitchell.

Converting Motion.

Nº 91,555.

Patented Jan. 22, 1869.

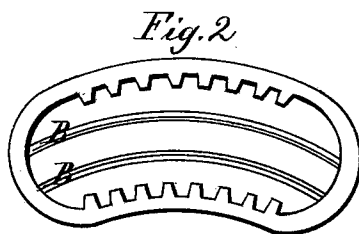
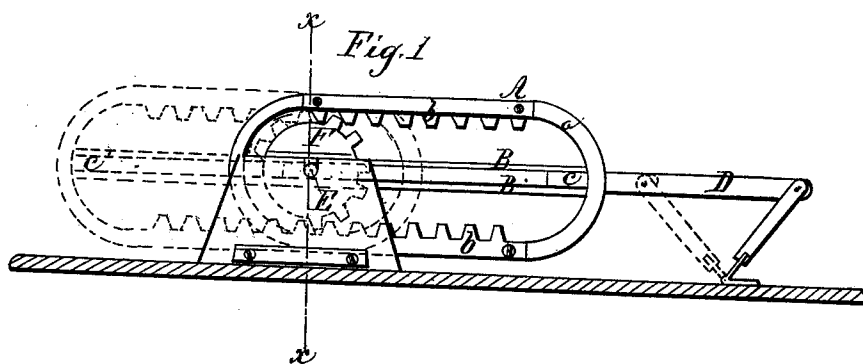


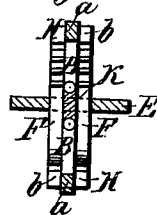
Fig. 4



Fig. 5



Fig. 3



Witnesses
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THOMAS A. MITCHELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 91,555, dated June 22, 1869.

IMPROVED DEVICE FOR CONVERTING MOTION.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS A. MITCHELL, of Washington, in the District of Columbia, have invented a new and useful Improvement in Converting Motion; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain guides, guide-blocks, and buffers, arranged as described.

In the accompanying drawings—

Figure 1 is a side view of my invention.

Figure 2 is a modified form of my rack.

Figure 3 is a sectional view of my rack through the line *x x*, fig. 1.

Figures 4 and 5 are guide-blocks.

In fig. 1, the double rack *A* is formed of the frame *a*, to which are fastened, in different planes, the racks *b b*; also the guide-rods *B B*, the elastic buffers *c c*, and the connecting-rod *D*, by which the contrivance may be attached to any machine of which it shall form a part.

Between the guide-rods *B B* is the shaft *E*, carrying two mutilated pinions, meshing with the racks alternately.

These pinions are formed with such a number of teeth, that during their continuous revolution, the rack will receive a reciprocating motion.

The guide-rods *B B*, resting on the shaft *E*, are intended to support and direct the motion of the frame *a*. But if the frame and racks be made in one piece, and solid, a slot may be used, the edges of which shall be the equivalent of the guide-bars.

The buffers *c c*, striking the shaft *E* at each end of

the stroke, prevent a strain upon the cogs of either rack or pinion at the instant of changing motion.

To avoid the wear of the shaft from the friction of the guide-rods, I introduce a block, similar to fig. 4 or 5, hung on the shaft between the guide-rods, as may be seen at *K*, in sectional view, fig. 3, in which *E* is the shaft; *F F*, the pinions; *B B*, the guide-rods; *b b*, the racks; and *a a*, the frame.

For producing reciprocating rectilinear motion, I prefer the form shown in fig. 1; but for certain purposes, I use racks of a simple or compound curvature, or any form adapted to the machine of which it makes part.

Fig. 2 is an illustration of a simple curved rack.

In order to increase the strength of the apparatus, I sometimes use four or more racks, arranged in opposite pairs, as in fig. 3, in which *b H b H* are the racks operated by the pinions *F F*.

Having thus described my invention,

I claim, and desire to secure by Letters Patent—

1. The guide-rods, forming a slot, resting on the shaft, for supporting and directing the racks.
2. Introducing a block in the slot, or between the guide-bars, hung on the shaft, to reduce friction and cause a more smooth and even motion of the racks.
3. In combination with the above, the elastic buffers at each end of the rack-frame, for preventing undue strain on the teeth of either racks or pinions, at the end of stroke.

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Witnesses:

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