

J. HAWTHORN.  
 DEVICE FOR CONVERTING MOTION.

No. 61,829.

Patented Feb. 5, 1867.

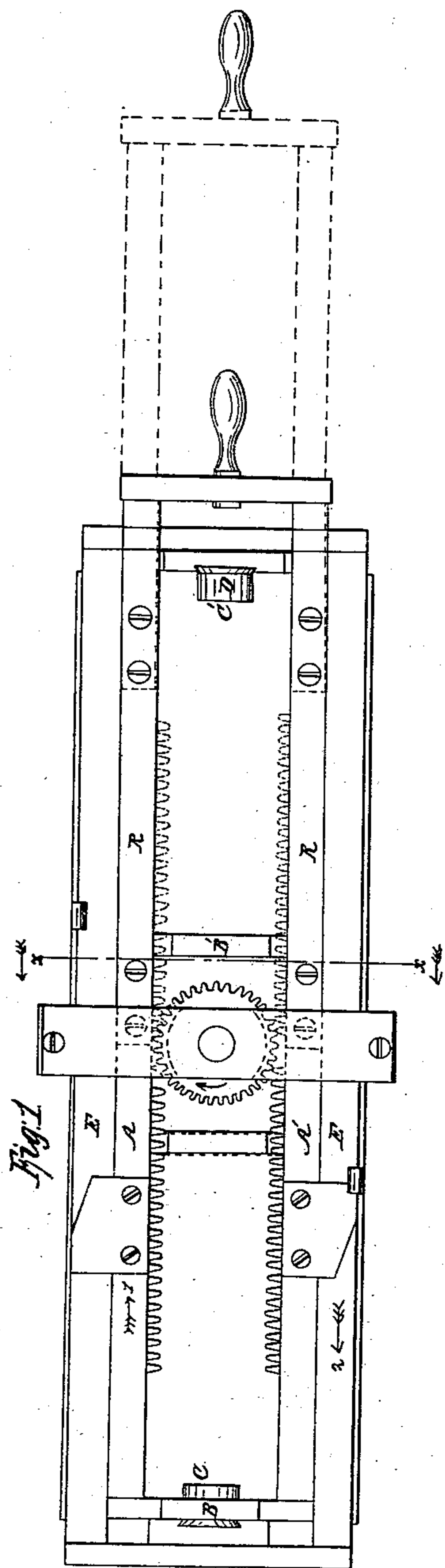


Fig. 1.

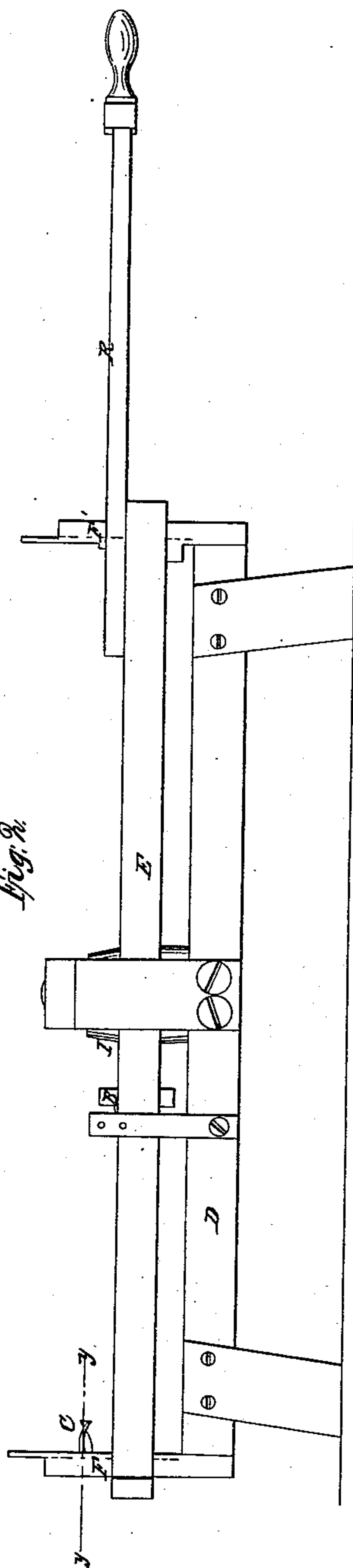


Fig. 2.

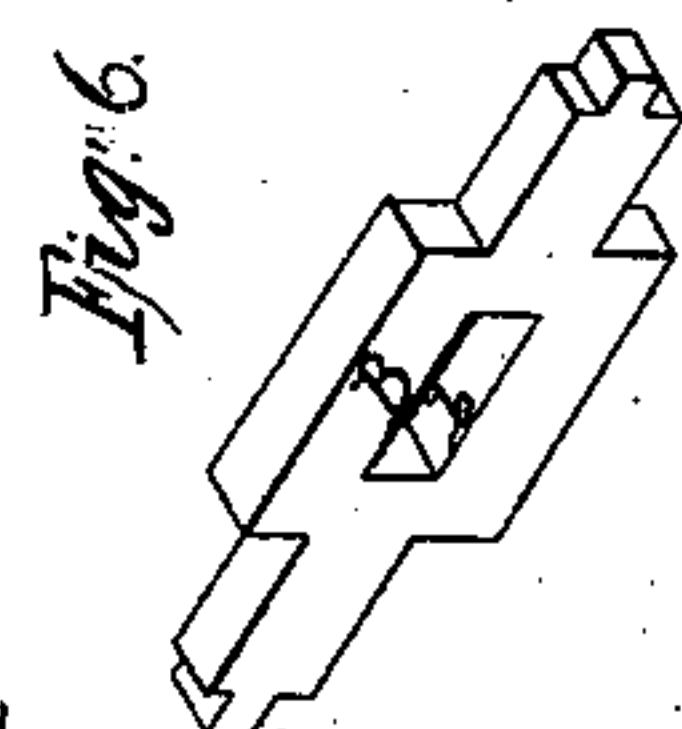


Fig. 6.

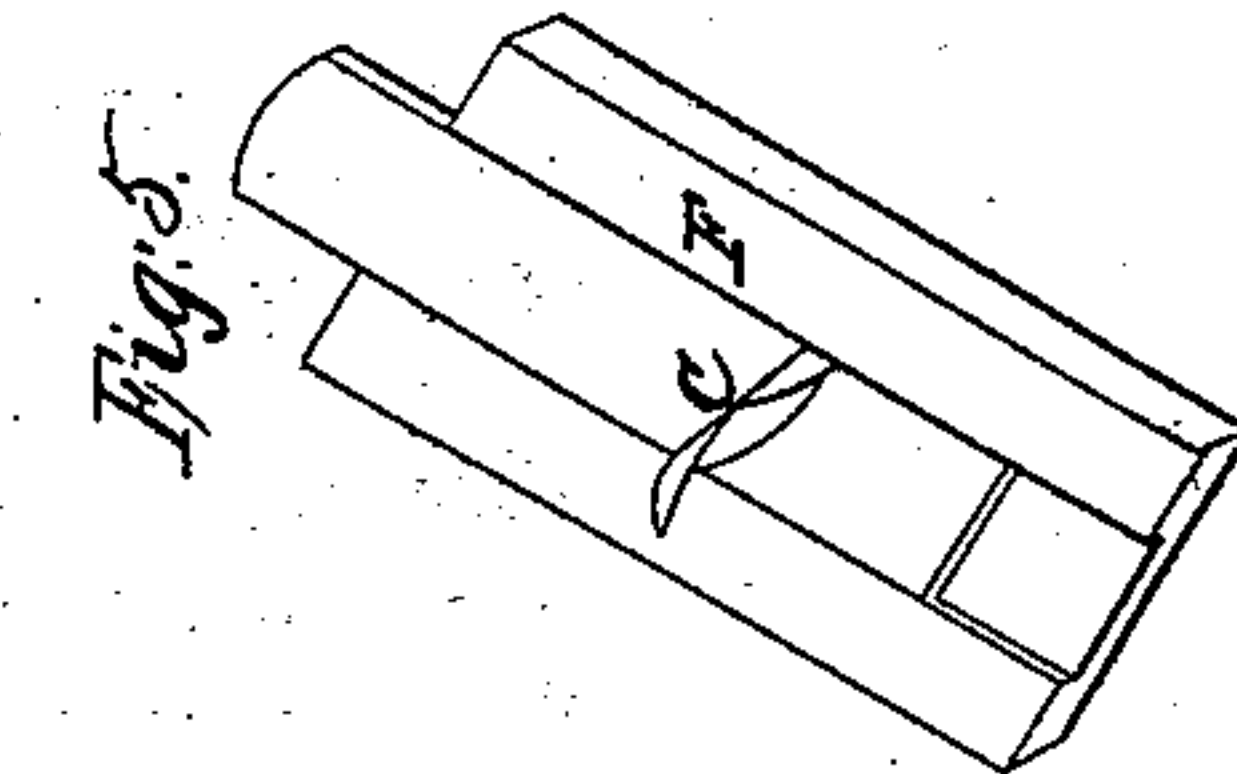


Fig. 5.

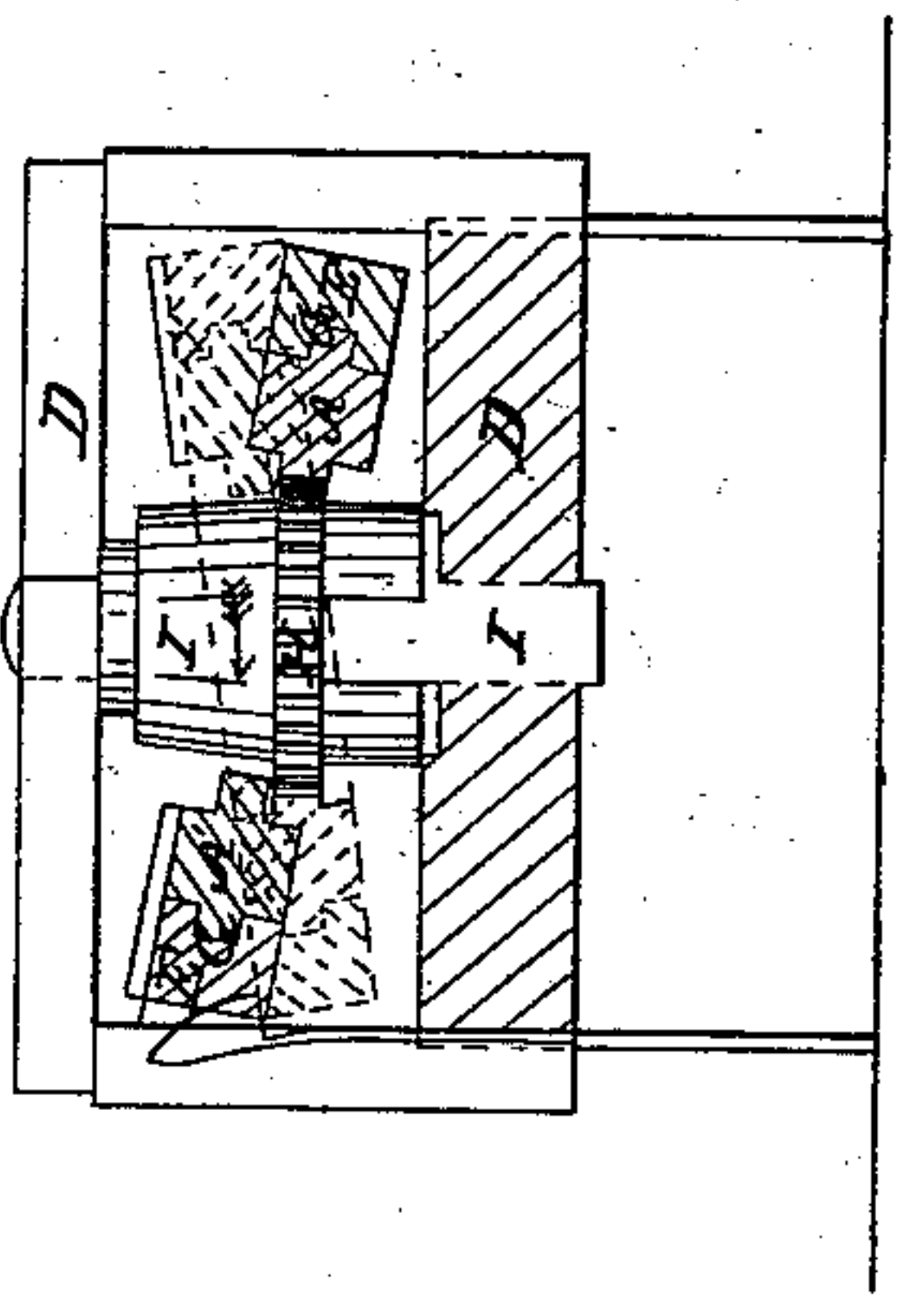


Fig. 3.

Fig. 4.

Witnesses  
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# United States Patent Office.

JARAD HAWTHORN, OF COSHOCTON, OHIO.

Letters Patent No. 61,829, dated February 5, 1867.

## 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, JARAD HAWTHORN, of Coshocton, in the county of Coshocton, and State of Ohio, have invented a new and improved Device for 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 a pair of racks, adapted to receive a reciprocating rectilinear movement from a steam piston or other motor, and guided in a suitable frame, which is oscillated, to cause the racks to engage alternately with the opposite sides of a pinion, so as to impart a continuous rotary motion to the latter, and to the shaft to which it is attached. In the drawings—

Figure 1 represents a top view of my invention.

Figure 2 is a side elevation of the same.

Figure 3 is a transverse section thereof, at *x x*, fig. 1.

Figure 4 is a transverse section of the reversing device, at *y y*, fig. 2.

Figure 5 is a perspective view of the latter.

Figure 6 is a perspective view of one of the slotted ends of the rack-frame hereinafter described.

Similar letters of reference indicate corresponding parts in the several views.

A A' represent a pair of toothed racks, connected at the ends by bars B B', formed with slots *b b*, which engage, at the end of each stroke, with spiral or oblique tappets or projections C C', upon standards F F', rising from the stationary frame D, so as to impart an oscillation to the yoke E, in which the rack-frame slides, as will be hereinafter described. G G represent guides, by which the rack-frame is confined to a rectilinear path in the yoke E. H represents a pinion, mounted on a shaft, I, and communicating a continuous rotary motion thereto, as will be presently explained. The oscillating yoke E may be mounted by pivots on the standards F F, or on any other suitable bearings.

### Operation.

It will appear from the illustration, in fig. 3, that but one of the racks A A' engages with the pinion H at any one time. Supposing the rack-frame to be in the position shown in figs. 1 and 3, and moving in the direction indicated by the arrow marked 1 in fig. 1, the rack A, engaging with the pinion H, will rotate it in the direction of the arrow marked thereon. At the instant the rack-frame reaches the end of its stroke, indicated by dotted red lines in fig. 1, and in full black lines in fig. 2, the slotted bar B', engaging with the tappet C', throws the frame and yoke into the reverse position represented by dotted lines in fig. 3, placing the racks A out of gear with the pinion H, and causing the rack A' to engage therewith on the opposite side, so that the return stroke of the rack-frame, in the direction indicated by arrow 2 in fig. 1, will continue to rotate the pinion H and its shaft I in the same direction. As the rack-frame again reaches the end indicated by full lines in fig. 1, the tappet C restores the oscillating yoke and rack-frame to the position shown in fig. 3, and the work proceeds as before. By this invention, the piston, at all parts of its stroke, exerts an equal bearing upon the rotary shaft, so that the motion of the latter will be as constant and uniform as that of the piston itself. The oscillating yoke or frame E is retained in its respective positions, by turns, by spring-catches projecting upon each side of the stationary frame near its longitudinal centre. The said catches take over the sides of the oscillating frame, so as to hold down whichever side is depressed, and may be automatically retracted by suitable projections from the rack-frame as the latter approaches each end of its stroke, so as to release the oscillating frame and permit the reversal of its position.

Having thus described my invention, the following is what I claim as new therein, and desire to secure by Letters Patent:

I claim the reciprocating rack-frame A A', B B', guided in an oscillating yoke, E, and engaging alternately with opposite sides of a pinion, H, so as to impart continuous rotation thereto, substantially as described.

I further claim the tappets C C', to reverse the position of the rack-frame, as described.

JARAD HAWTHORN.

Witnesses:

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