

(No Model.)

W. H. RANKIN.
MECHANICAL MOVEMENT.

No. 312,760.

Patented Feb. 24, 1885.

Fig:1.

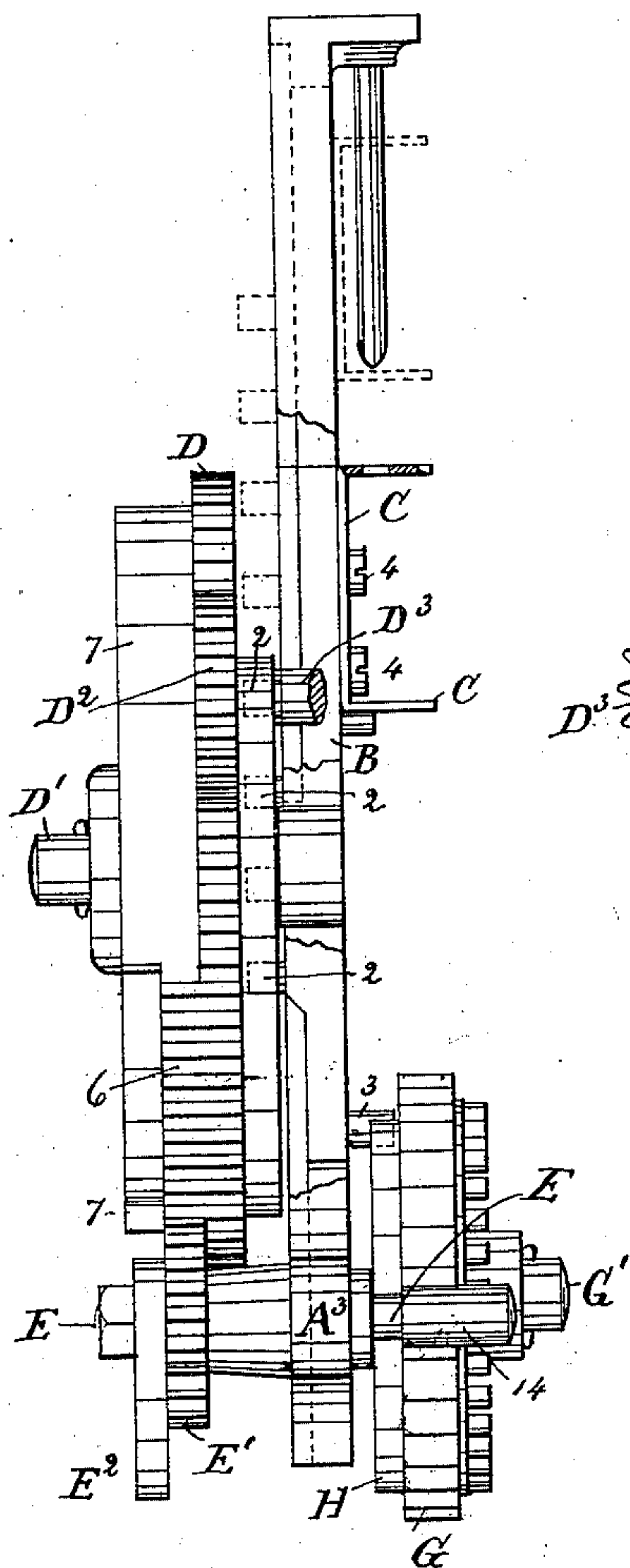
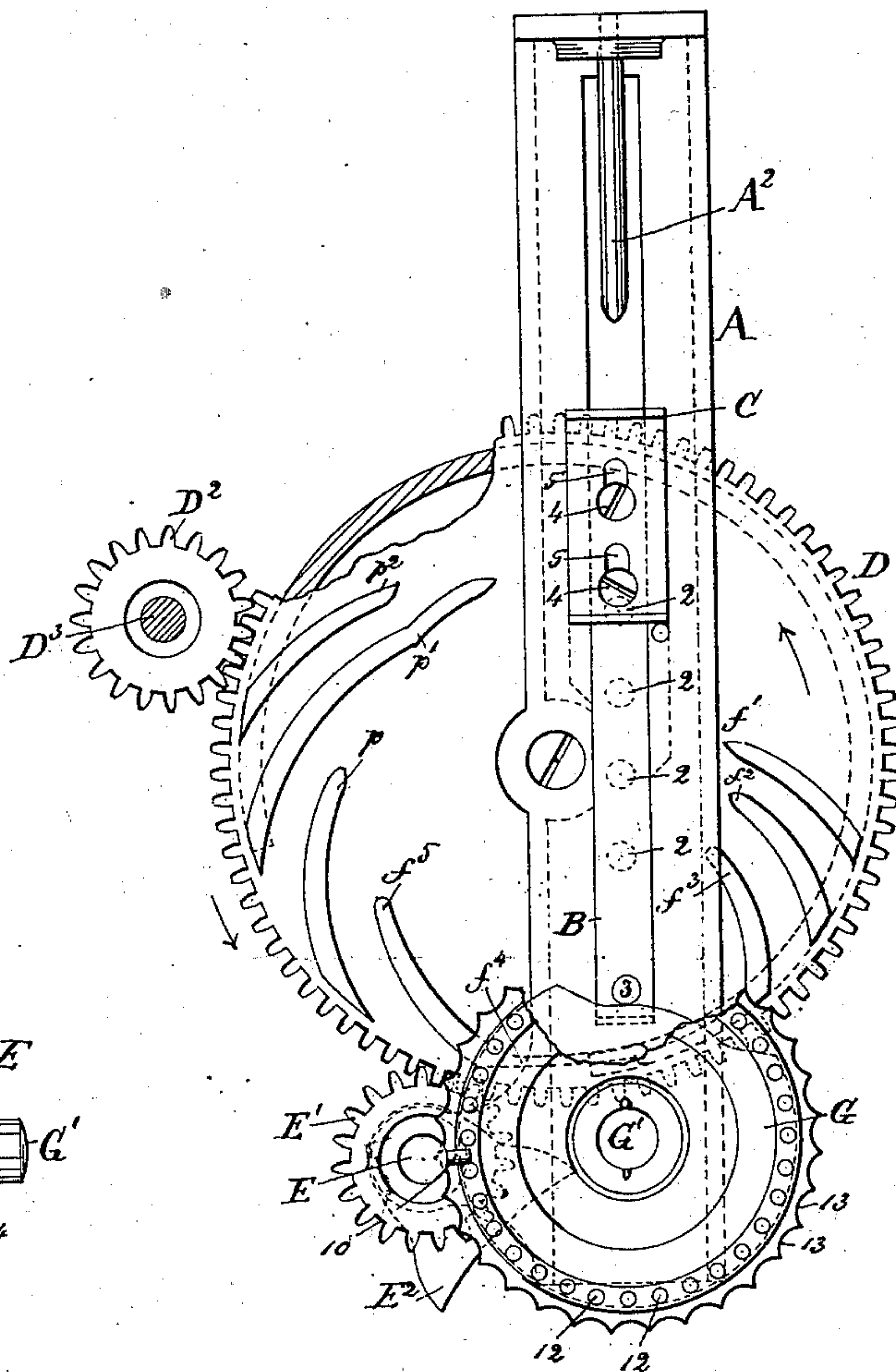


Fig:2.



Witnesses.

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MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 312,760, dated February 24, 1885.

Application filed January 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RANKIN, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Mechanical Movements, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of an improved mechanical organization whereby an intermitting reciprocating movement may be produced from a continuous rotary movement.

My invention consists in a frame, a slide-bar therein, a carriage or jaw attached to the slide-bar, and a rotating toothed wheel provided at one side with cam projections to engage pins or projections of the slide-bar, combined with a pattern-cam, a shaft or stud on which it is mounted, and gearing between it and the said toothed wheel to move the pattern-cam, the latter moving the slide-bar at predetermined intervals in such manner as to place the pins at the side of the slide-bar next the cam of the toothed wheel in position to be engaged by the said cams, which latter then move the slide-bar.

Figure 1 is an edge view of a mechanical organization embodying my invention; and Fig. 2, a right-hand side view of Fig. 1, the main toothed wheel and one of the gear below it covering the pattern-cam being broken away to show the said cam.

In the drawings, A is a frame in a groove in which slides the bar B, provided at its inner side with a series of pins, 2, (shown mostly in dotted lines,) and at its front side with a pin, 3. The slide-bar B has the carriage or jaw C loosely attached to it by the screws 4, extended through slots in the carriage or jaw so as to permit end play of the carriage or jaw on the bar. The carriage or jaw when moved by the bar will carry and move any other bar or device which is engaged or embraced by it. The jaw or carriage during part of its movement is guided by the guide-rod A², attached to frame A. The toothed wheel D, mounted on the stud D', carried by the frame A is herein shown as provided entirely about its periphery with a series of teeth, which for about

one-fourth of the periphery of the wheel are longer in the direction of the axis of the wheel than are the remaining teeth, the longer teeth being shown at 6. The toothed wheel D has at one side a flange, 7, which is extended about three-fourths the distance about the wheel about opposite the base of the teeth thereof. The frame A, in a suitable ear, A³, receives a short shaft, E, which has attached to it a pinion, E', and an arm, E², having a concaved face. The teeth of the pinion E correspond in number with the long teeth 6 of the wheel D, and as the wheel D is rotated steadily by the pinion D² on the positively-driven rotating shaft D³ it happens that the pinion E' is rotated once every time that the teeth 6 engage it, or once during each full rotation of the wheel D. As soon as the teeth of the wheel D run out of mesh with those of the pinion the concaved face of the arm E², carried by the shaft E, meets the flange 7, and thereafter until the teeth 6 again arrive in engagement with the pinion E the said arm E² and flange 7 co-operate to form a lock for the pinion and its shaft E. The shaft E, as herein shown, has a tooth, 10, which at each rotation thereof, by its engagement with one of the series of teeth 12 of a gear or wheel, G, causes the same to be rotated one step at a time, and, as herein shown, the periphery of the wheel G is provided with semicircular concavities 13, which, co-operating with the part 14 of the shaft E, serve to lock the wheel G, except when the pin 10 acts on a pin, 12. The wheel G is loose on a stud, G', attached to the frame A, and to the wheel G, at its rear side, is attached the pattern-plate H, against the periphery of which bears the pin 3 of the slide-bar B. When the pin 3, during the rotation of the wheel G and pattern-plate, rests on the periphery of the cam, where the latter is of greatest radius, the bar B is moved sufficiently to place its uppermost pin, 2, at the rear side of the bar in such position as to enable the point of the cam f' to pass under and engage the under sides of the said pins, the cam projections f² f³ thereafter coming successively under the series of pins 2 2, the said cam projections, by their co-operation with the several pins 2 2, &c., acting to move the slide-bar and the carriage or jaw

C upward into the dotted-line position, Fig. 1, the gear D at such time being rotated one-half around beyond the position, Fig. 2; but when the pattern-cam is in the position, Figs. 1 and 2, so as to permit the pin 3 to fall into a notch in the said cams below its truly circular part, the pins 2 2, &c., are made to occupy a position so low down as to enable the cams $f' f^2$, &c., to pass above the pins 2 2, and the slide-bar and carriage or jaw C is left at rest.

To enable the slide-bar to rise and fall for the extent of the throw which may be imparted to it by the pattern-cam alone without lifting the carriage or jaw, I have slotted the latter, as at 5 5, so that the bar B may be moved its full throw by the pattern-cam in bringing the upper side of the screws 4 4 against the upper ends of the said slots. By changing the shape of the pattern-cam, or cutting away or notching its periphery for a greater or less distance, or by making the cam-surface of the pattern-cam against which the pin 3 rests more or less out of a true circle, the number of reciprocations of the slide-bar at each rotation of the wheel D may be determined, or by the shape of the pattern-cam the slide-bar may be reciprocated for any desired number of times in succession, or be left at rest during any desired number of rotations of the wheel D, or be left at rest for one or more rotations thereof, and then be operated for one or more rotations. The cam projection f^3 forms part of a segmental flange or projection, f^4 , (shown dotted in Fig. 2,) which is prolonged by a projection, f^5 . The projections $p p'$, &c., receive the pins 2 successively and aid in permitting the gradual descent of the bar. When the bar or slide is in its highest position, as in dotted lines, Fig. 1, the third pin 2 from the outer end of the bar will pass upon the then upper side of the flange or projection f^4 .

I claim—

1. The frame A, the carriage or jaw, the slide-bar provided with a series of pins, 2 2, and a rotating wheel provided with cam projections to engage the said pins 2 and move the slide-bar, combined with slowly-moving pattern-cam to act upon the said slide-bar and place it in position to have its pin 2 engaged by the said cam projections, or in a position in which the said cam projections will pass above the pins 2 and leave the slide-bar at rest, substantially as described.

2. The continuously-rotating wheel D, provided with a series of cams to engage the pins or projections of and reciprocate a slide-bar out and in at each rotation of the said wheel, combined with a slowly-moving pattern-cam shaped to cause the pins of the slide-bar to be placed in position to be engaged by the cam projections to move the slide-bar, or to pass by the said pins and leave the said slide-bar at rest, substantially as described.

3. The continuously-rotating wheel D, provided with a series of cam projections to engage pins or projections from a slide-bar, and a carriage or jaw slotted as described and connected with the slide-bar loosely by means of screws, to permit a certain amount of lost motion between the carriage or jaw and the slide-bar, combined with a slowly-rotating pattern-cam shaped to cause the pin of the slide-bar to be placed in position to be engaged by the cam projections to move the slide-bar, or to pass by the said pins and leave the slide-bar at rest, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. RANKIN.

Witnesses:

G. W. GREGORY,

B. J. NOYES.