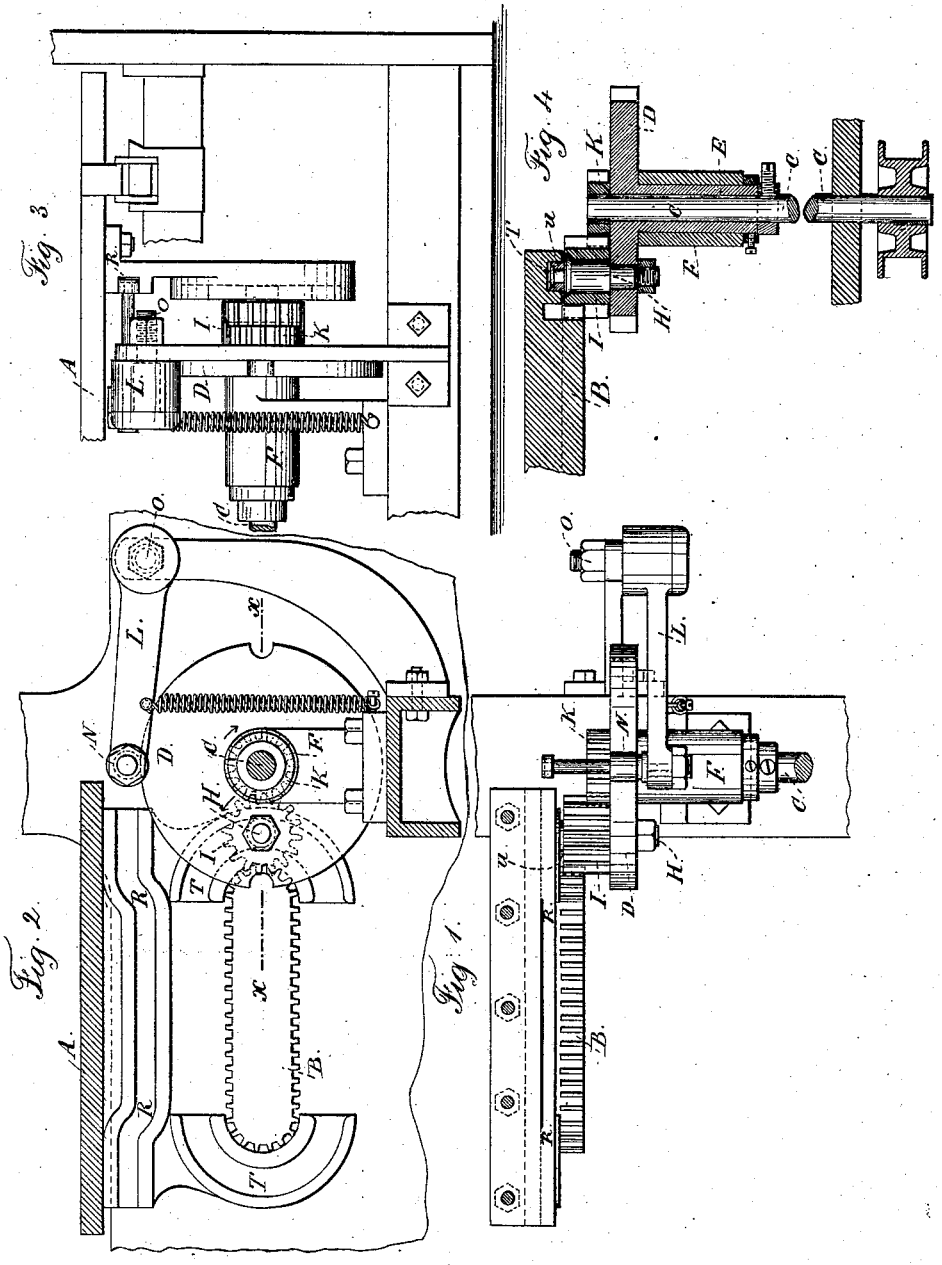
(No Model.)

C. POTTER, Jr.

RACK MOTION FOR PRINTING PRESSES.

No. 260,233. Patented June 27, 1882.



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CHARLES POTTER, JR., OF PLAINFIELD, NEW JERSEY.

RACK-MOTION FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 260,233, dated June 27, 1882.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES POTTER, Jr., of Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Rack-Motions for Printing-Presses, of which the following is a specification.

The bed upon which the types rest has been reciprocated by a rack and pinion similar to the mangle-motion, and in some instances the pinion has been made to revolve around the end of the rack, such pinion being upon a crank-arm. In printing-presses having these devices for moving the bed there has been difficulty in obtaining a perfect registration of the printed sheets, because the slightest looseness in the parts is magnified in consequence of the pinion not occupying a fixed position and being liable to swing more or less. Hence the register of the sheet will be varied, and the two impressions will not be in correct position in relation the one to the other.

My invention consists in the combination, with the type-bed and rack in a printing-press, of an actuating shaft and pinion, and an intermediate pinion actuated by the first-named pinion and giving motion to the rack, and a disk carrying the stud of the second pinion, and a locking mechanism for holding the disk during the whole of the movements of the bed, except when the pinion is turning around the ends of the rack. By this combination of devices the pinion that gives motion to the rack occupies a fixed position, and there is not any more risk of the sheet being out of register than in any ordinary press where gearing intervenes between the feeding and impression cylinder and the reciprocating bed.

In the drawings, Figure 1 is a plan view of the rack and its driving mechanism. Fig. 2 is an elevation. Fig. 3 is an end view, and Fig. 4 is a horizontal section of driving-shaft and pinion at the line *x x*.

The reciprocating bed A is to be of any desired size or character, and it is supported upon slides in the ordinary manner. The rack B is upon the side of a flange hanging downwardly below the bed A. This rack has teeth upon the top and bottom surfaces, and also around the ends. The axis of the driving-shaft C is opposite the horizontal central line of the rack B. Said shaft C is to be rotated by competent power. There is a disk, D, that surrounds the shaft C, and it has a tubular sleeve, E, within the bearing or journal-box F, and both the shaft and sleeve are supported by this journal-box F, the shaft revolving within the sleeve. The disk D is notched at its opposite edges. It also is provided with a gudgeon or crank-pin, H, for the pinion I. At the end of the shaft C is the pinion K, gearing into the pinion I.

The size and proportion of the parts are such that the pinion I gears with the rack-teeth, as well as with the pinion K. I have shown the pinion I as having the same size and number of teeth as there are in the two curved ends of the rack-bar, so that the pinion I may be the same size throughout and be sufficiently long to gear into the rack-teeth as well as the teeth of the pinion K. The sizes of the pinions, however, may be varied, if desired.

The pinion K gears into one end of the pinion I, and the other end of this pinion I is in gear with the rack-teeth B, and such pinion K does not come into contact with the rack B, as the latter moves freely across the end of the shaft C and pinion K.

There is a plate at each end of the rack B, in which plate there is a semicircular groove, T, and at the end of the crank-pin H there is a roller, *u*, entering such groove and serving to keep the teeth of the pinion I properly in gear with the teeth of the rack B during the time that the pinion I is passing around the ends of rack from the top to the bottom of said rack, or the reverse.

It will now be understood that if the shaft C and its pinion are revolved in the direction shown by the arrow the pinion I will, in the position shown in Fig. 2, be passing up from the lower part of the rack to the upper part, and that the roller *u*, acting in the groove T, will commence to move the bed in the reverse direction to that in which it has before been moving, and that the roller *u* will pass out of the end of the semicircular groove T as soon as the pinion I reaches its highest position, and the disk D is held, as next described, during the time that the pinion is acting on the straight part of the rack. The parts act in a similar manner at both ends of the rack, and when the pinion is below the rack the disk is held

in the same manner as it is when the pinion is above the rack.

The locking-arm L is provided with a pin or roller, N, adapted to pass into the notches of the disk D, and it is pivoted at *o* to a suitable support on the frame of the machine.

Upon the bed of the press there is a cam, R, that is shaped so that just before the bed arrives at the end of its movement such cam lifts the locking-arm L and releases the disk D. This allows the said disk D to make half a revolution as the pinion I moves around the end of the rack, and when the bed has moved a short distance on the return motion the cam R allows the roller N to drop into the notch in the disk D and hold the same, with its pinion, in proper position as the pinion is moving the bed endwise in the other direction. A similar cam, R, is provided to act upon the locking-arm near the end of the stroke of the bed in either direction, so as to allow the disk to make a half-revolution as the pinion revolves around either end of the rack.

It will be evident that the locking device that holds the disk D may be operated by any suitable mechanism at the proper time—such, for instance, as a rotary cam on a counter-shaft geared to the main shaft to act upon such locking-lever; or there may be a projection on the disk and a stop or catch on the locking-lever to hold such disk, the catch or stop being removed automatically at the proper time; or there may be holes in the disk and a spring to enter the same, and mechanism for withdrawing such spring-latch; or an arm may take the place of the disk and the locking mechanism be arranged to act upon such arm to hold it except when automatically withdrawn, as aforesaid.

By this improvement the rack is moved uniformly by the pinion, and there is little or no risk of inequality or inaccuracy in the register or in the proper turning of the parts.

I claim as my invention—

1. The combination, with the type-bed and toothed rack, of the shaft C, disk or arm D, and the pinions I and K and automatic locking mechanism, substantially as set forth.

2. The combination, with the type-bed and toothed rack, of the driving-shaft C, disk D, crank-pin or gudgeon H, pinion I upon such gudgeon, the pinion K on the shaft C, the locking device, and the cams upon the bed A, for the purposes and as set forth.

3. The combination, with the toothed rack having semicircular ends, of the pinions I and K, actuating-shaft C, crank-pin or gudgeon H for the pinion I, and the semicircular grooves T and roller *u*, substantially as set forth.

Signed by me this 21st day of February, A. D. 1882.

C. POTTER, JR.

Witnesses:
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