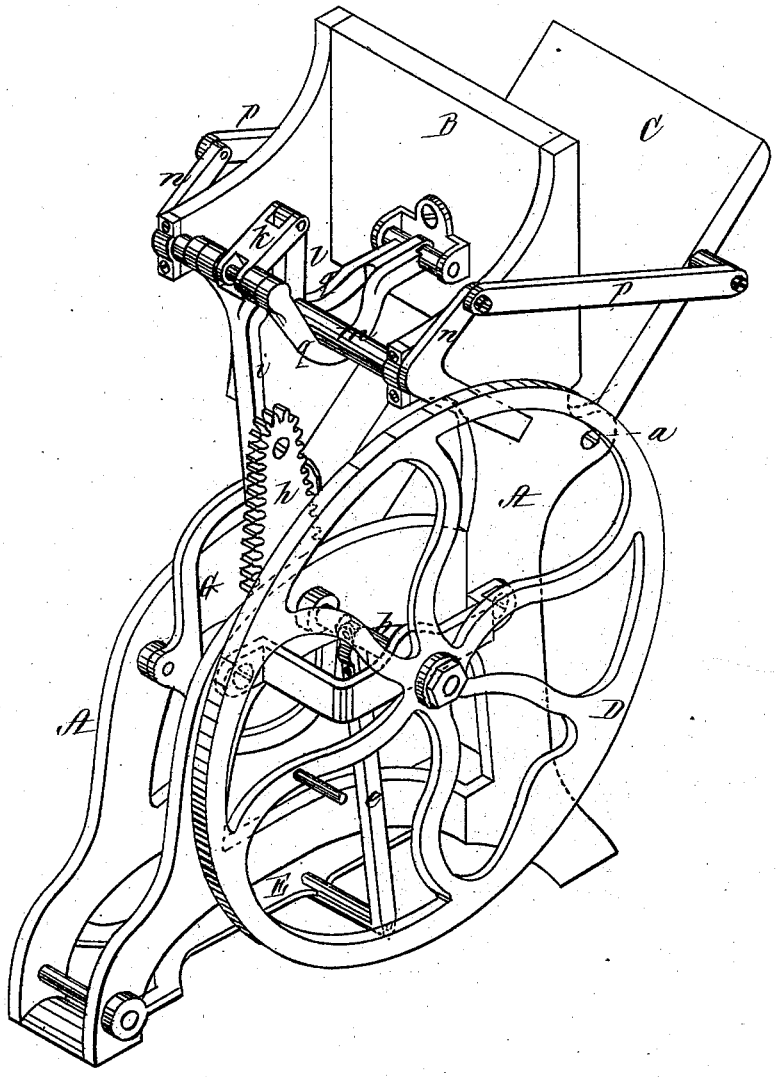
2 Sheets—Sheet 1.

H. A. MANLEY.
Printing-Press.

No. 203,171. Patented April 30, 1878.

Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 2.

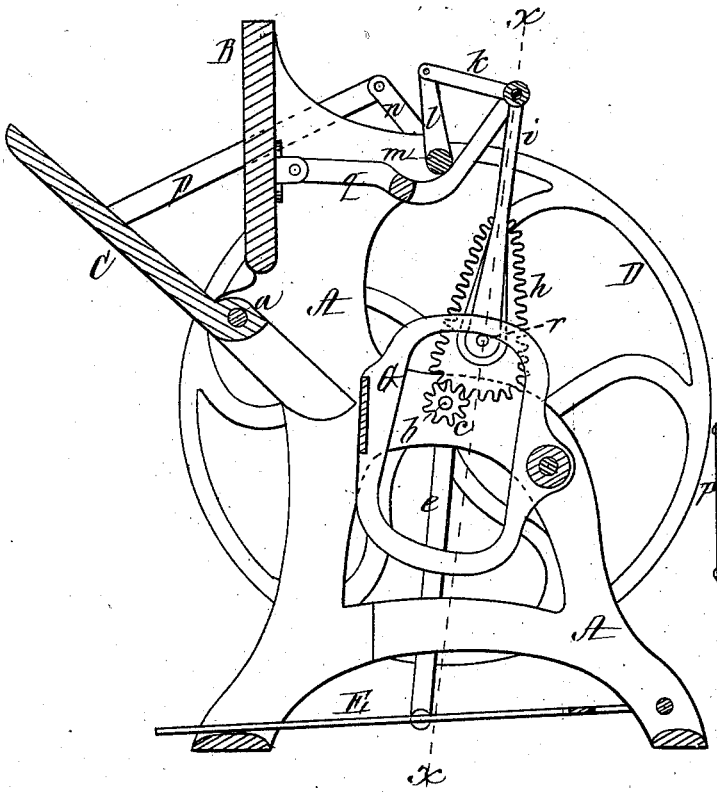
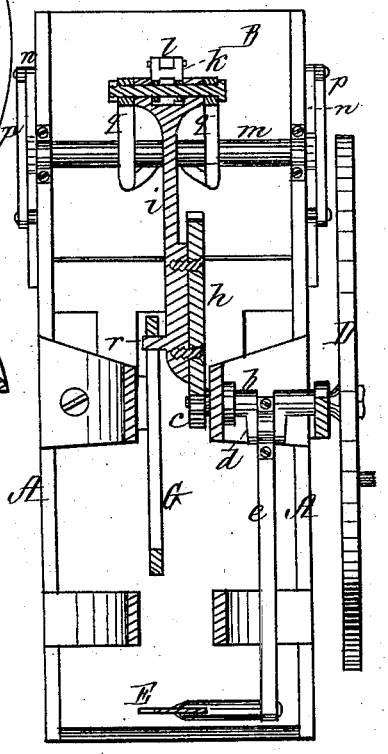


Fig. 3.



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UNITED STATES PATENT OFFICE.

HORACE A. MANLEY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **203,171**, dated April 30, 1878; application filed April 17, 1878.

To all whom it may concern:

Be it known that I, HORACE A. MANLEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Printing-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a printing-press constructed in accordance with my invention. Fig. 2 is a vertical section through the same. Fig. 3 is a transverse vertical section on the line *x x* of Fig. 2.

This invention consists in operating the platen or bed of a printing-press by means of a toothed plate actuated by and traveling around a pinion on the end of the driving-shaft, the toothed plate being kept in contact with the pinion by a suitable guide, whereby the construction of the press is greatly simplified and its cost materially reduced, the mechanism running easily and with little noise in either direction.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the frame-work of a printing-press; B, the bed, and C the platen, pivoted at *a* to the frame-work. *b* is the driving-shaft, to the outer end of which is secured the fly-wheel D, the inner end carrying a pinion, *c*. The shaft *b* is provided with a crank, *d*, to which is secured the upper end of a rod, *e*, the lower end of which is connected to a treadle, E, by means of which the shaft is revolved.

The pinion *c* engages with a toothed plate, *h*, of a form similar to a wedge, the sides being straight and diverging from each other, while the top and bottom are curved, the latter being of greater width than the former. Rising from the toothed plate *h* is a pitman, *i*, the upper end of which is connected by a link, *k*, with the arm *l* of a rocker-shaft, *m*, having its bearings in the frame-work; and to the opposite ends of this shaft are secured cranks *n*, which are connected with the platen by rods *p;* and thus, as the shaft *m* is rocked, the required movement is imparted to the platen.

To the rear side of the bed B is pivoted one end of a guide-lever, *q*, the opposite end of which is bifurcated and pivoted to the upper end of the pitman *i*, at its junction with the link *k*.

The teeth of the plate *h* are kept at all times in contact with the pinion *c* by a hollow cam-shaped guide, G, against the inner surface of which travels a pin, *r*, projecting from the plate *h*, the shape of the cam-guide corresponding to the path described by the pin *r*, as the toothed plate *h* is carried around the pinion. As the driving-shaft is revolved, the toothed plate *h* is continuously carried around the pinion *c*, and the pitman *i*, through the connections described, is thus caused to rock the shaft *m* and operate the platen, the length of the "dwell," or necessary suspension of movement of which, when wide open, to allow time for the removal of one sheet and the introduction of another, corresponding to the time occupied by the movement of the bottom of the toothed plate *h* over the pinion *c*, during which period the pitman has no vertical motion and the rocker-shaft remains stationary. It will be seen that the duration of the dwell can be increased or diminished by varying the width of the bottom of the toothed plate, the impression being taken while the top of the toothed plate is immediately under the pinion, at which time the rods *p* and cranks *n* are in line with each other, producing an effect similar to toggle-joints.

It is evident that other mechanism than that described may be employed, if desired, to communicate the motion of the pitman to the platen. The toothed plate may be of a form other than that shown—for instance, the top may be made of greater width, in order to produce a dwell at the time the impression is being taken, which is sometimes found desirable; or the two sides may be parallel, in which case the top and bottom will be of equal width. But if they are not of sufficient width to produce dwells of the required duration, an ordinary cam-connection may be employed for the purpose, the cam-guide G being, in all cases, made to correspond to the path described by the pin *r*.

The press may be so constructed that any given number of revolutions of the driving-

shaft will produce a single impression, which number will vary according to the size of the press, and the platen can be stationary and the bed movable, or both may be made to move, if desired, the mechanism being arranged to suit the requirements of the case.

A printing-press constructed in accordance with my invention possesses the following advantages over the ordinary printing-presses now in use, viz.: Simplicity, lightness, and consequent reduction in the cost of construction, the extreme facility and little noise with which it may be operated, and the capability of taking an impression by revolving the fly-wheel in either direction, a matter of considerable importance where an inexperienced person is employed.

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

1. The toothed plate *h*, actuated by and traveling around the pinion *c*, in combination with a platen and with a guide for keeping the plate in contact with the pinion, for operating the platen or bed of a printing-press, substantially as and for the purpose set forth.

2. The toothed plate *h*, pinion *c*, and a guide for keeping the plate in contact therewith, in combination with the pitman *i*, guide-lever *q*, link *k*, arm *l*, rocker-shaft *m*, cranks *n*, rods *p*, and platen C, operating substantially in the manner and for the purpose described.

Witness my hand this 18th day of April, A. D. 1876.

HORACE A. MANLEY.

In presence of—
N. W. STEARNS,
P. E. TESCHEMACHER.