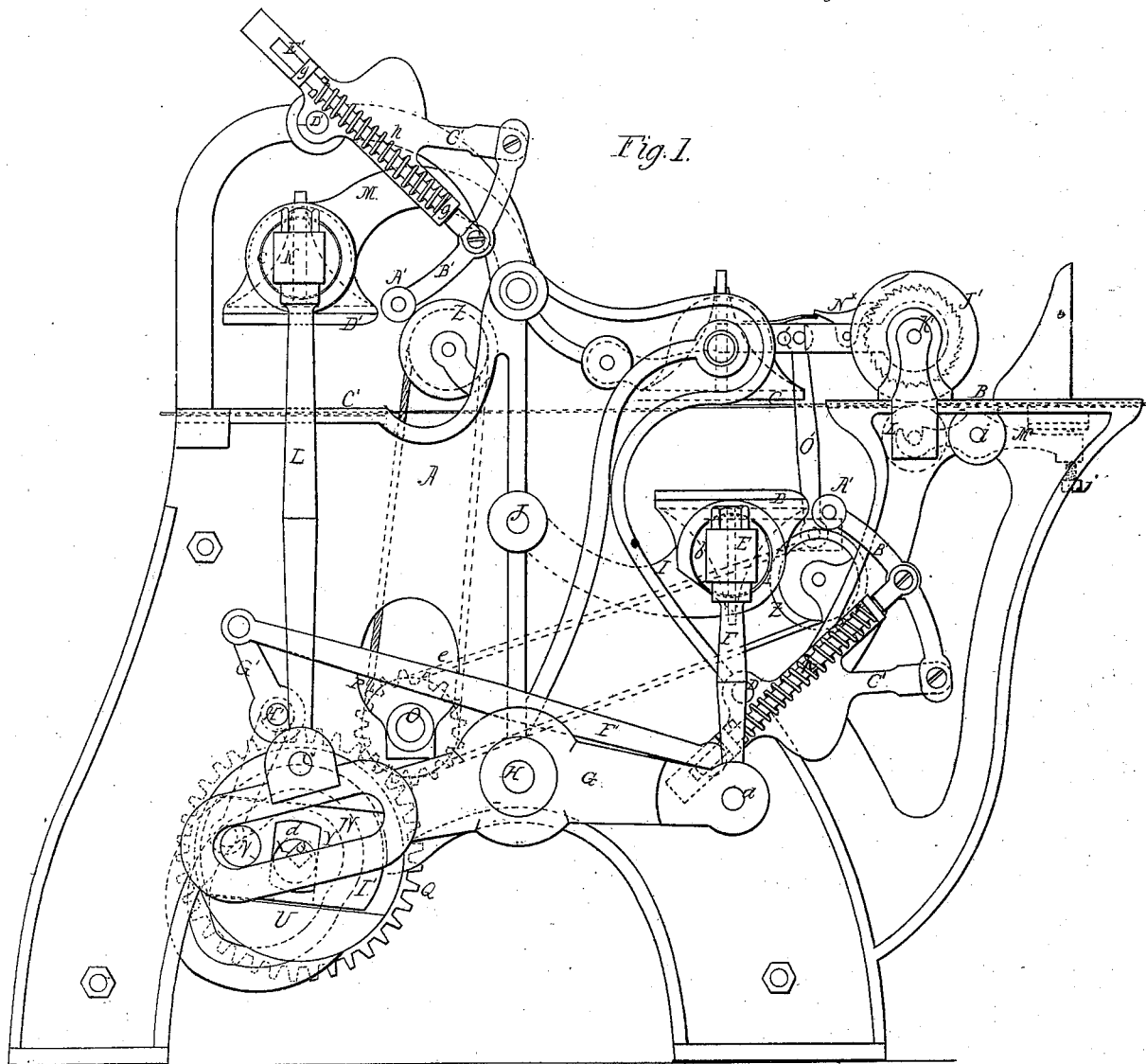


M. J. Imbach. Sheet 1 of 3 Sheets.
Printing Press.
No 54357. Patented May 1, 1866.



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Chas. L. Bach

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M. J. Imbach. Sheet 2. of 3 Sheets.
Printing Press.

N^o 54357.

Patented May 1, 1860.
Fig. 2.

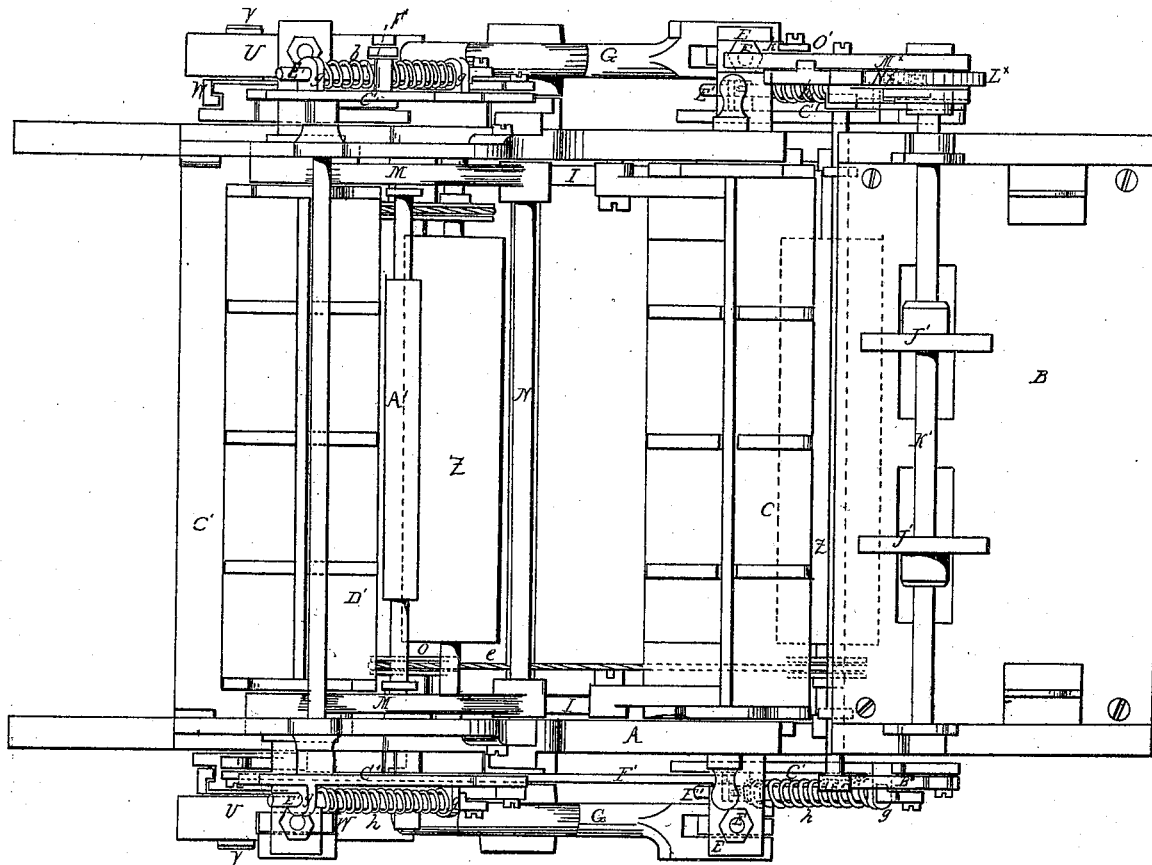


Fig. 4.

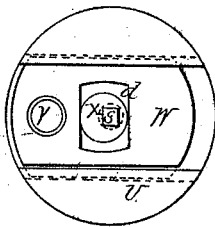
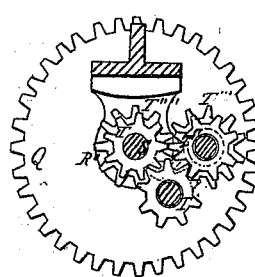


Fig. 3.



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M. J. Imbach. Sheet 3 of 3 Sheets.
Printing Press.

No 54357.

Patented May 1, 1866.

Fig 5.

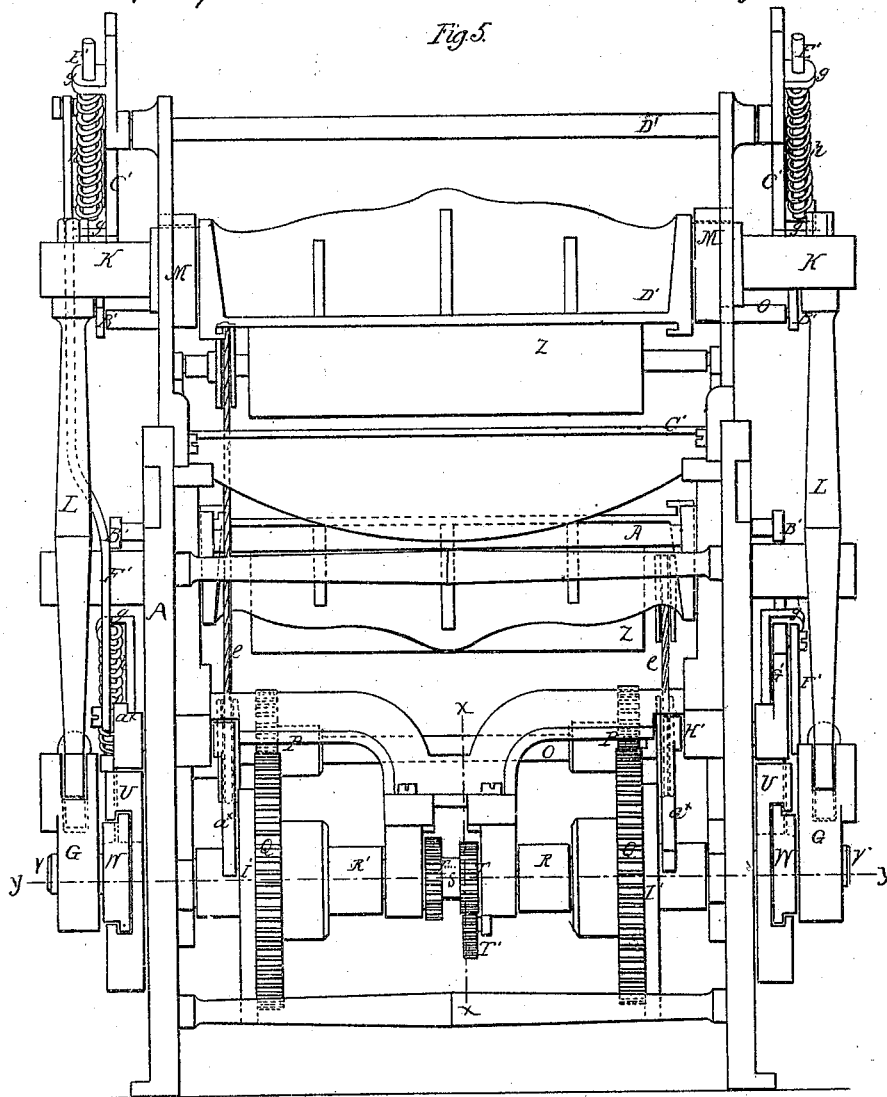
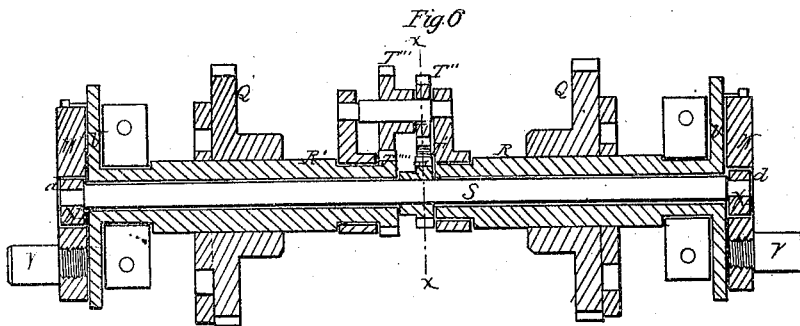


Fig 6.



Witnesses

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UNITED STATES PATENT OFFICE.

MARTIN G. IMBACH, OF NEW YORK, N. Y.

PRINTING-PRESS.

Specification forming part of Letters Patent No. 54,357, dated May 1, 1866.

To all whom it may concern:

Be it known that I, MARTIN G. IMBACH, of the city, county, and State of New York, have invented a new and Improved Printing-Press; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a side view of my invention; Fig. 2, Sheet No. 2, a plan or top view of the same; Fig. 3, a transverse vertical section of a detached portion of the same, taken in the line *x x*, Fig. 6; Fig. 4, a detached side view of a crank-pulley pertaining to the same; Fig. 5, Sheet No. 3, a rear-end view of the same in elevation; and Fig. 6, a horizontal section of a portion of the same, taken in the line *y y*, Fig. 5.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved printing-press for printing both sides of a sheet simultaneously or during one passage of the latter through the press.

The invention consists in a novel and improved means employed for operating the bed, and in an improved inking and feeding mechanism, as hereinafter fully shown and described, whereby all the parts are made to operate automatically from a single driving-shaft, the necessary dwells allowed the beds to give the ink-rollers an opportunity to pass over the forms after each impression, and the feed mechanism made to work intermittently or during the time only that the forms are free from or not in contact with the beds.

The object of the invention is to obtain a simple and economical press for the purpose specified, and which will operate smoothly and well and not be liable to get out of repair or have its parts become deranged by use.

A represents the frame of the press, which may be constructed in any proper manner to support the working parts.

B represents the feed-table, and C C' the platens, against which the sheets bear when receiving the impressions from the forms. These platens are stationary or firmly secured in the frame A in a horizontal position, and they are about in the same horizontal plane, as will be seen by referring to Fig. 1.

D D' represent two beds, one for each platen

C C'. The bed D works below the platen C, and has arms E E projecting from its ends, which arms are connected by rods F to one end of levers G G, which are fitted on the ends of a shaft, H, at the outer side of the frame A, the shaft H passing transversely through said frame. The rods F F are connected to the levers G G by pivots *a*, and on each arm E of the bed D is a cylindrical portion, *b*, on which radius-arms I I are fitted loosely, said arms being keyed on a shaft, J, in the frame A.

From the above description it will be seen that the bed D does not work up and down in quite a vertical direction, but slightly in a curve, or in the arc of a circle of which the shaft J is the center; but the platen is always retained in a parallel position relatively with platen C, in consequence of the former being connected by the rods F with the levers G and the arms I fitted loosely on the cylindrical parts of the arms E of said bed. Hence the form, which is secured to the bed D, will bear or press properly against the sheet underneath the bed C, so that every part of the form will be brought in contact with the sheet and a good or perfect impression given it.

The other bed, D', works above the other platen, C', and it is provided with arms K at its ends, which are connected by rods I with the other ends of the levers G G, the rods I being connected with the levers by pivots *c*. The arms K, like the arms E E of the bed D, have cylindrical portions *c c*, on which radius-arms M are fitted loosely, said arms being keyed on a shaft, N, in the frame A.

The two beds, it will be seen, have a similar movement, being both arranged in the same way; but they move simultaneously in opposite directions, one rising as the other descends, and vice versa; but as one, D, works under its platen C, and the other, D', above its platen C', the impressions are given simultaneously, the form on the bed D printing the under side of the sheet and that on the platen-bed D' printing the opposite side.

O represents the driving-shaft from which motion is communicated to all the working parts of the press. On this shaft are keyed two pinions, P P, which gear into wheels Q Q on rollers R R', fitted loosely on a shaft, S. (See Figs. 5 and 6.)

On the shaft S, between the two rollers R R, there is keyed a pinion, T, which is connected by pinions T' T'' T''' with a pinion, T''''', on the

inner end of the collar R'. (See more particularly Figs. 3 and 6.) By this arrangement motion is communicated from the shaft O to the shaft S, and from the shaft S the levers G G are operated as follows: On the outer end of each collar R R' there is a crank-pulley, U, having a movable wrist-pin, V. These wrist-pins are attached to slides W, which are fitted in grooves in the crank-pulleys and have openings *d* made in them, with parallel sides and slightly curved or rounded ends, to receive eccentrics X, which are at the ends of the shaft S. The wrist-pins V work in oblong slots Y in the levers G, as shown clearly in Fig. 1.

The eccentrics X X move the slides W and cause the wrist-pins V to move in the slots Y and cause a cessation of movement of the levers G and platens D D' at the termination of the upward and downward movement of the same, the wrist-pins actuating the levers G as they approach the ends of the slots Y. Thus the ink-rollers have abundant time to pass over the forms and ink the same, and the forms are allowed time to press sufficiently against the paper to give a good impression.

The inking device is composed of two rollers, Z Z, which distribute the ink upon small rollers A' A', the latter passing over the forms on the platens. The distributing-rollers Z Z are permanent, or work in fixed bearings, and are rotated by belts or cords *e* from the driving-shaft O. The ink-rollers A' have their journals fitted in rods B', which are pivoted to radius-arms C', fitted on shafts D in the frame A, and the rods B' are connected about at their centers, by pivots *f*, to rods E', which are fitted loosely in bearings *g* on the arms C', and have spiral springs *h* on them, which springs have a tendency to keep the rollers pressed against the forms as the former pass over the latter.

The rollers A' are moved over the forms on the platens when each is at its greatest distance from its bed by means of rods F', connected at one end to the arms C' and at the opposite end to arms G' on shafts H', the latter being operated by arms *a*^x from cams I', attached to the wheels Q Q. When the rollers A' move back or off from the forms on the platens they come in contact with the distributing-rollers Z Z and receive the ink therefrom, the cams I' being of such a form as to retain the rollers A' on Z until the necessary time arrives for them to pass over the forms. Thus by this very simple arrangement I obtain a perfect automatic working device, the parts being extremely few and not liable to become deranged by use.

The paper-feeding device is composed of rollers J', fitted on a shaft, K', above the feed-table B, and working in contact with rollers L' underneath the feed-table, the latter rollers

being fitted in bars M' on a shaft, *i*, which bars have screws *j* passing through them to regulate the pressure of the rollers against the paper. (See Fig. 1.)

The rollers J' are turned intermittently, the movement being effected while the beds are approaching the beds, in order that the sheets may pass into position between the beds and beds before the former reaches the latter. The paper is fed into the press from a continuous roll; hence one feeding device only is required for both beds.

The rollers J' are turned at the proper time as follows: The shaft K' has a ratchet, L^x, keyed upon it, and said shaft also has an arm, M^x, fitted loosely on it, to which arm a pawl, N^x, is attached, which engages with the ratchet when moved in the proper direction, which is upward. The arm M^x is connected by a rod, O', with an arm, *k*, attached to one of the arms of the bed D, and hence it will be seen that each time the bed D rises toward its bed C and the bed D' descends toward its bed C' the rollers J' will be turned and the paper fed to the press, the pawl N' passing down over the ratchet as bed D descends without engaging with the former.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The operating, in a two-bed printing-press for printing both sides of sheets simultaneously, of the beds by means of levers G G, so arranged and connected with the beds that the latter will move simultaneously in opposite directions, and both give the impression at once at opposite sides of the sheets, substantially as described.

2. The employment or use, in connection with said beds, of movable wrist-pins V, attached to slides and operated by eccentrics, or arranged in any equivalent way so as to operate the levers G in such a manner as to give the necessary dwells or cessation of movement to the beds, substantially as and for the purpose specified.

3. The placing of the journals of the ink-rollers A' in rods B', pivoted to radius-arms C' and connected with spring *h*, said parts being placed in such a position relatively with the forms on the platens that the rollers may pass over the forms and properly ink the same, substantially as set forth.

4. Operating the ink-rollers A' through the medium of the rods F', arms C' G' *a*^x, and cams I', when said ink-rollers thus operated are used in combination with a press provided with two beds arranged substantially as described.

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