2 Sheets—Sheet 1.

T. S. REYNOLDS.

PRINTING PRESS.

No. 20,090. Patented Apr. 27, 1858.

Fig. 1.

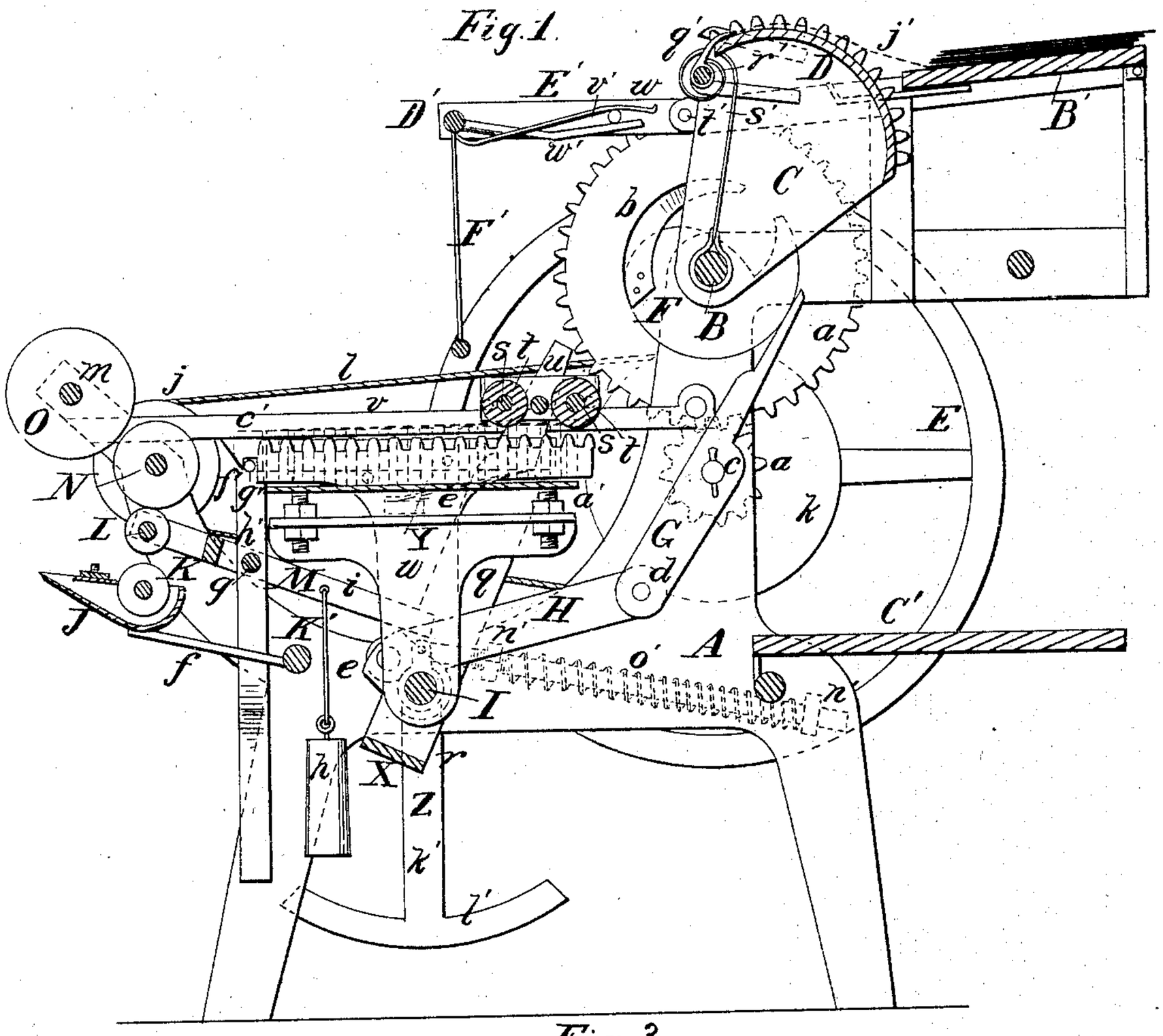
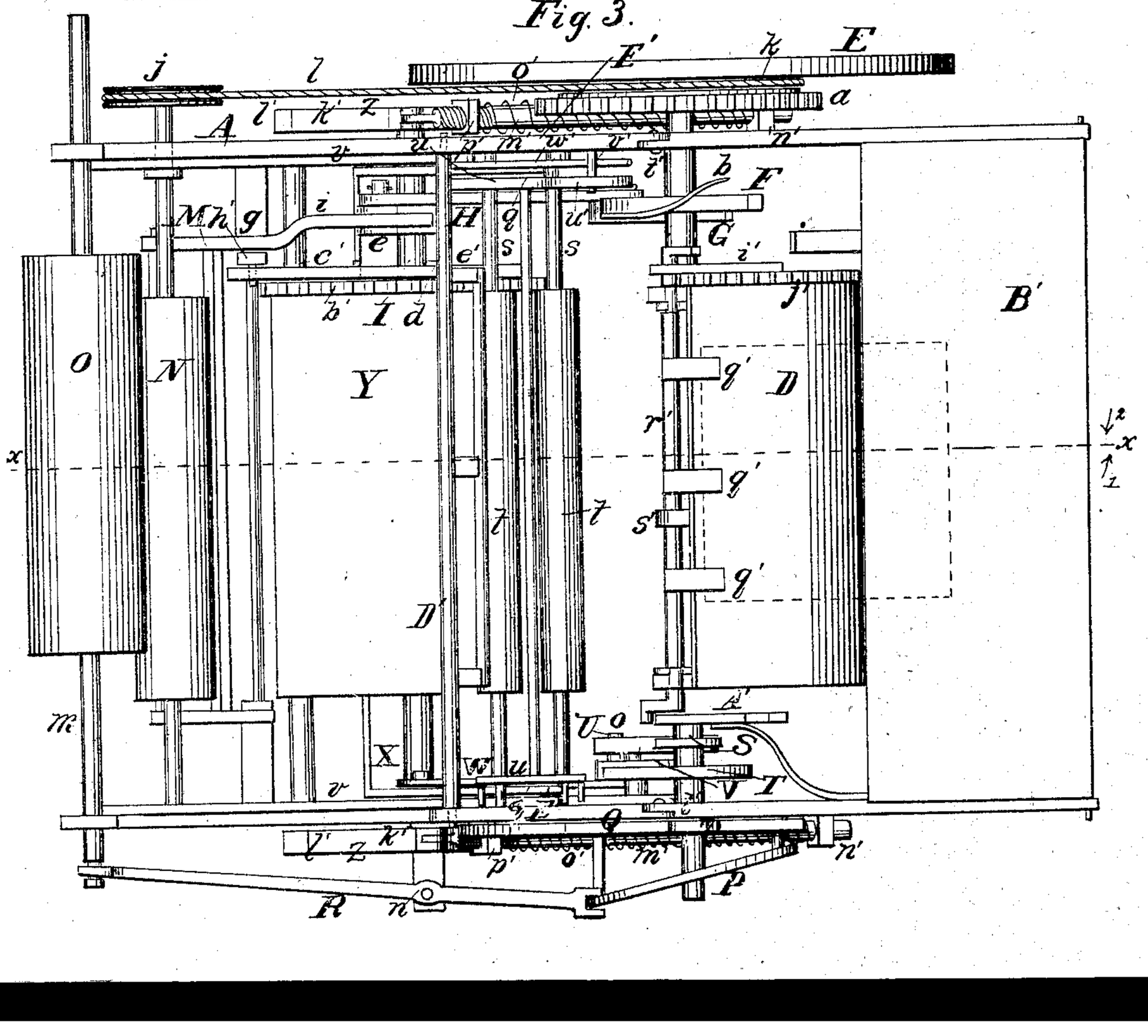


Fig. 3.



2 Sheets—Sheet 2.

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PRINTING PRESS.

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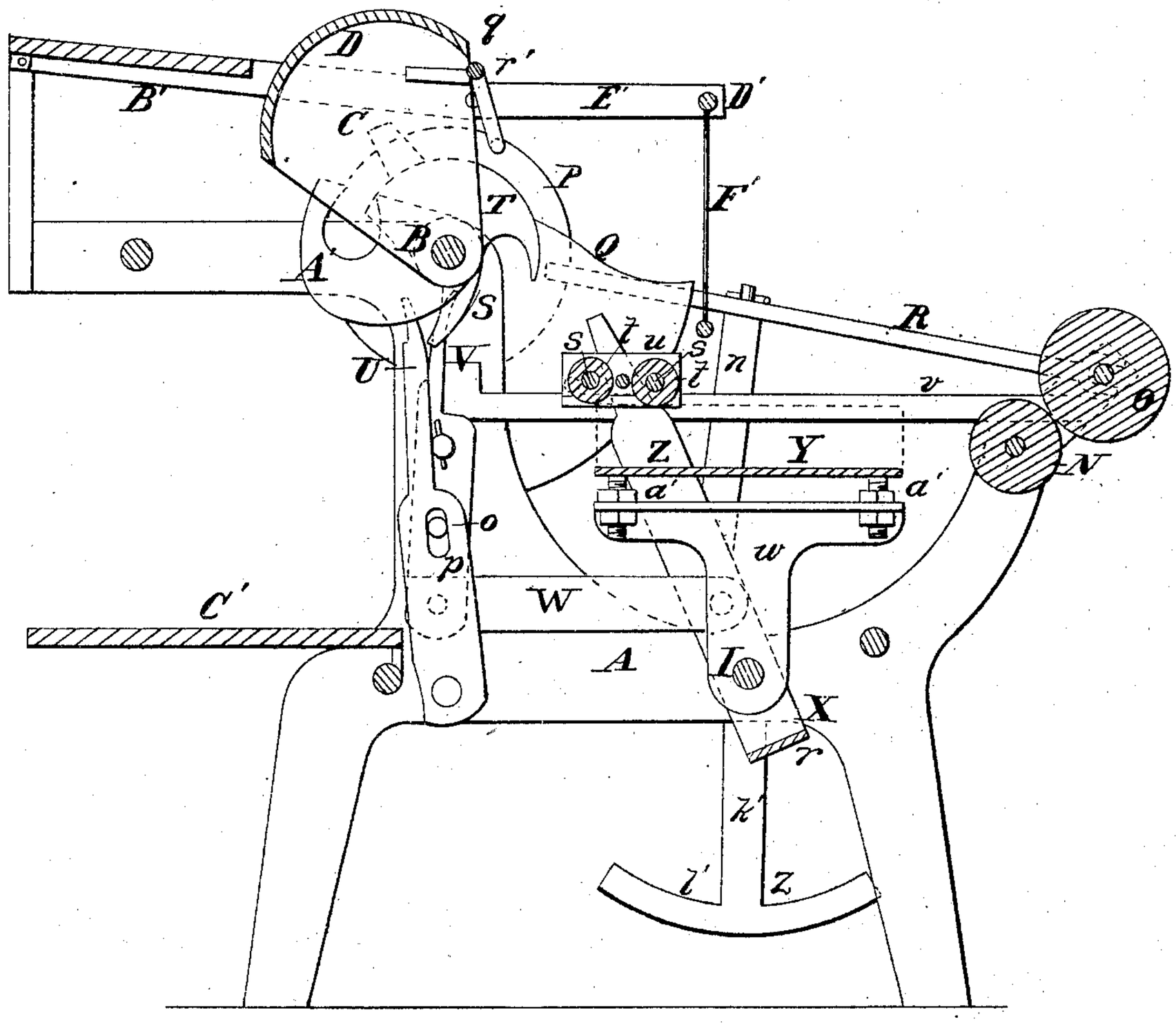
Fig. 2.



UNITED STATES PATENT OFFICE.

T. S. REYNOLDS, OF ATHENS, GEORGIA.

PRINTING-PRESS.

Specification of Letters Patent No. 20,090, dated April 27, 1858.

To all whom it may concern:

Be it known that I, T. S. REYNOLDS, of Athens, in the county of Clark and State of Georgia, have invented a new and Improved Printing-Press for Letter-Press Printing; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of my improvement taken in the line *x*, *x*, Fig. 3, and looking in the direction indicated by arrow 1. Fig. 2, is also a vertical section of do, taken in the same line *x*, *x*, as Fig. 1, but looking in the opposite direction as indicated by arrow 2. Fig. 3, is a plan or top view of do.

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

This invention consists 1st, in the employment or use of a rotating segment which receives the blank sheets of paper, in combination with an intermittingly rocking bed on which the form is placed and between which and the segment the impression is given, the above parts being so arranged and operated as hereinafter described that the blank sheets are properly presented to the form, the necessary impression given, the form remaining stationary a sufficient time to be inked, and the printed sheets allowed to be discharged from the segment by the most simple means, the whole forming a very simple and efficient arrangement.

The invention consists 2nd in a novel inking device, so arranged as to work automatically and conjointly with the segment and bed; the ink rollers passing over the form during the "dwells" of the bed, and properly inking the same, and during the movement of the bed receiving the necessary supply of ink from the fountain through the medium of distributing rollers as hereinafter shown and described.

The invention consists 3rd, in a novel means employed for counter-balancing the bed, whereby the counterpoise may be graduated as occasion may require to compensate for the varying weight of different forms and the bed therefore equally balanced at all times.

The invention consists 4th, in a guard frame arranged as hereinafter shown to keep the sheets in proper position on the segment as they are carried around to the form.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents the frame of the press which may be constructed of cast iron and in any proper way to support the working parts.

B, is a shaft which is placed transversely in the upper part of the frame A, and has two arms C, C, secured firmly to it, one near each end.

D, is a segment of a hollow cylinder which is secured to the outer ends of the arms C, C. The segment D, is not concentric with the shaft B, it has a shorter radius than the arms C, as will be plainly seen by referring to Figs. 1 and 2. The shaft B, is rotated by gear wheels *a*, *a*, from a driving wheel E. On the shaft B, at one end a cam F, is placed. This cam has a spring guard *b*, attached to it.

G, is a lever which works on a fulcrum pin *c*, attached to the frame A. The lower end of this lever is pivoted as shown at *d*, to one end of a lever H, the opposite end of which is pivoted to a projection or arm *e*, on a shaft I, which is placed transversely in the lower part of the frame A, and parallel with the shaft B.

J, is an ink fountain which is attached to elastic bars *f*, *f*, said bars being secured to a stationary shaft K′, which is placed in the frame A, just at the outer side of the shaft I. The ink fountain J, has a roller K, fitted within it, and this roller presses at certain intervals against a roller L, which is fitted in the outer end of a frame M, said frame being pivoted or hung in the frame A, at *g*, and having a weight *h*, attached to its inner end, said weight having a tendency to keep one side *i*, of the frame M, which is longer than the opposite side, upon the projection or arm *e*, which serves the office of a cam as well as that of a lever or arm as will be hereinafter more particularly referred to. The roller L, presses at intervals against a roller N, the shaft of which has a pulley *j*, on one end, and by which with the aid of a belt *l*, the roller N, is rotated from a pulley *k*, on wheel E.

O, is a roller the shaft *m*, of which is fitted in the frame A. This shaft *m*, is allowed to slide laterally in the frame A, and it is operated from the shaft B, by means of

a cam P, which is merely an annular or circular plate attached to a counterpoise Q, on the shaft B, the plate having an oblique position relatively with the shaft as shown clearly in Fig. 3, a connecting rod R, which is pivoted to the upper end of an upright *n*, attached to the frame A, communicates a lateral motion from the cam P, to the shaft *m*, of the roller O. On the shaft B, and near the end opposite to that where the cam F, is placed, two cams S, T, are placed. These cams actuate simultaneously two levers U, V, in opposite directions. These levers are connected by a pin *o*, which is attached to one lever and fits in an oblong slot *p*, made in the other, see Fig. 2. The lower end of the lever V, is pivoted to one end of a bar W, the opposite end of which is pivoted to a frame X, which is hung loosely on the shaft I. The frame X, is formed of two bars *q*, *q*, placed loosely on the shaft I, and having their lower ends connected by a bar *s*. The upper ends of the two bars *q*, *q*, pass between the ends of two shafts *s*, *s*, which have each an ink roller *t*, on them, the shafts *s*, being fitted in bearings *u*. The ends of the shafts *s*, *s*, rest upon horizontal bars *v*, *v*, which are attached, one to each side of the frame A, and in such a way that they may be raised and lowered as circumstances may require. On the shaft I, two arms, *w*, *w*, are permanently placed and to the outer ends of these arms a plate Y, is attached. The plate Y, may be attached to the arms *w*, *w*, by means of set screws *a'*, as shown in Fig. 2. To one end of the plate Y, a rack *b'*, is attached and to the outer side of this rack a bar *c'*, is pivoted, as shown at *d'*, said bar having a spring *e'*, bearing against its under side at one end and keeping a notch *f'*, in the bar *c'*, over a pin *g'*, attached to an upright *h'*, in the framing. To one of the arms C, of the segment D, a bar *i'*, is attached, and this same segment has its edge toothed as shown at *j'*. To each end of the shaft I, a counterpoise Z, is attached. These counterpoises may be bars *k'*, attached to the shaft the bars having weights *l'*, attached to their lower ends. The upper ends of the bars *k'*, have each a rod *m'*, attached, said rods being allowed to work freely in guides *n'* and having each a spiral spring *o'*, around them, the strength of which may be graduated by a nut *p'*, placed on a screw thread at one end of the rods. The segment D, is provided with nippers or fingers *q'*, attached to a bar *r'*, which has a spring *s'*, connected with it, one end of the bar *r'*, is bent in crank form and it is actuated at the proper time so as to open the nippers to receive the blank sheets and to allow them to be discharged from the segment by a cam A'.

B', is the feed board on which the blank sheets to be printed are placed, and C', is the fly board on which the printed sheets are discharged.

D', is a shaft attached to the outer ends of bars E', which are pivoted to the framing as shown at *t'*. The shaft D', has a pendent frame F', attached, and a spring *u'*, is connected with the shaft D', said spring bearing on the upper side of a pin *v'*, which is attached to one of the bars E', a rod *w'*, is also attached to the shaft D', said rod bearing against the under side of the pin *v'*.

The operation is as follows:—The blank sheets to be printed shown in red, are placed on the feed board B, and motion is given the wheel E, by any proper means. The segment D, has a continuous rotary motion given it, its shaft B, being rotated by the gearing *a*, *a*, from the wheel E, while the plate Y, is the bed on which the form is placed, shown in red. The segment D, is balanced on its shaft B, by means of the counterpoise Q, and the plate or bed Y, is balanced on its shaft I, by means of the counterpoises Z,—but as different type forms frequently vary in weight the counterpoises must be graduated to suit circumstances. This is effected by regulating the springs *o'*, on the shafts *m'*, by adjusting the nuts *p'*, so that the bed and form will always be perfectly counterbalanced.—As the segment D, rotates, the fingers *q'*, grasp the blank sheets one at a time and carry them around, the sheets being caught in the bite between the segment and type form, the bed Y, being operated in conjunction with the segment D, in consequence of the teeth *j'*, at one end of the segment gearing into the rack *b'*, at one end of the bed Y, the bar *i'*, at one end of the segment tripping the catch bar *c'*, and freeing the bed. The sheet receives the impression between the segment and form, and as the form is a plane surface, the segment is made necessarily eccentric with its shaft B, in order that a proper pressure or bearing will be obtained on all points of its surface. After the sheet has received its impression the fingers *q'*, are opened by the cam A', and the printed sheet falls on the fly-board C'. The sheet while passing around on the segment D, is retained on the segment by the frame F'. After the printed sheet has been dropped on the fly board, the bed X, is moved back to its original position by the levers G, H, actuated by the cam F, and when moved back to a horizontal position it remains stationary a sufficient time to allow the cams S, T, to actuate the levers U, V, and move the rollers *t*, *t*, back and forth over the form before the teeth *j'*, of the segment D, engage with the rack *b'*, of the bed. The rollers *t*, *t*, ink the form and they may be adjusted higher or lower as circumstances may require by adjusting the bars

v, *v*. The rollers *t*, *t*, receive their proper supply of ink from the fountain J, at the end of their backward stroke through the medium of the rollers K, L, N, O, the roller L, receiving ink from the roller K, and carrying it to roller N, the roller L, being operated by means of the frame M, which is moved at the proper time by the weight *h*, and the projection *e*, on shaft I, which as previously stated serves the office of a cam as well as that of an arm or lever. The roller on account of its lateral movement, distributes the ink properly on the rollers *t*.

This press is extremely simple and effective in its operation. It may be rapidly operated as there are no parts liable to get out of repair or subjected to undue wear, and as the segment and bed are both counterpoised or balanced the press may be operated with a moderate expenditure of power.

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

1. The rotating segment D, in combination with the intermittingly rocking bed Y, when constructed and arranged to operate as herein described, to wit, the segment having a continuous rotary movement, while the bed rocks to and from the segment, and remaining, while in a vertical or nearly vertical position, stationary a sufficient length of time to have the form properly inked.

2. The inking device formed of the fountain J, and the rollers K, L, N, O, *t*, *t*, operated by the cams S, T, levers U, V, bar W, and the frame M, with the weight *h*, and cam *e*, arranged to operate conjointly with the segment D, and bed Y, so that the form will be properly inked during the "dwell" or the cessation of the movement of the bed as described.

3. The counterpoises Z, Z, when used in connection with the springs *o'*, as shown whereby the counterpoises may be graduated as circumstances may require.

4. The frame F', attached to the shaft D', which is fitted in the bars E', and having the spring *u'*, and rod *w'*, attached substantially as described and for the purpose set forth.

THOMAS S. REYNOLDS.

Witnesses:
JOHN CRAWFORD,
P. P. THOMAS.