2 Sheets—Sheet 1.

G. GORDAN.

PRINTING PRESS.

No. 36,839. Patented Nov. 4, 1862.

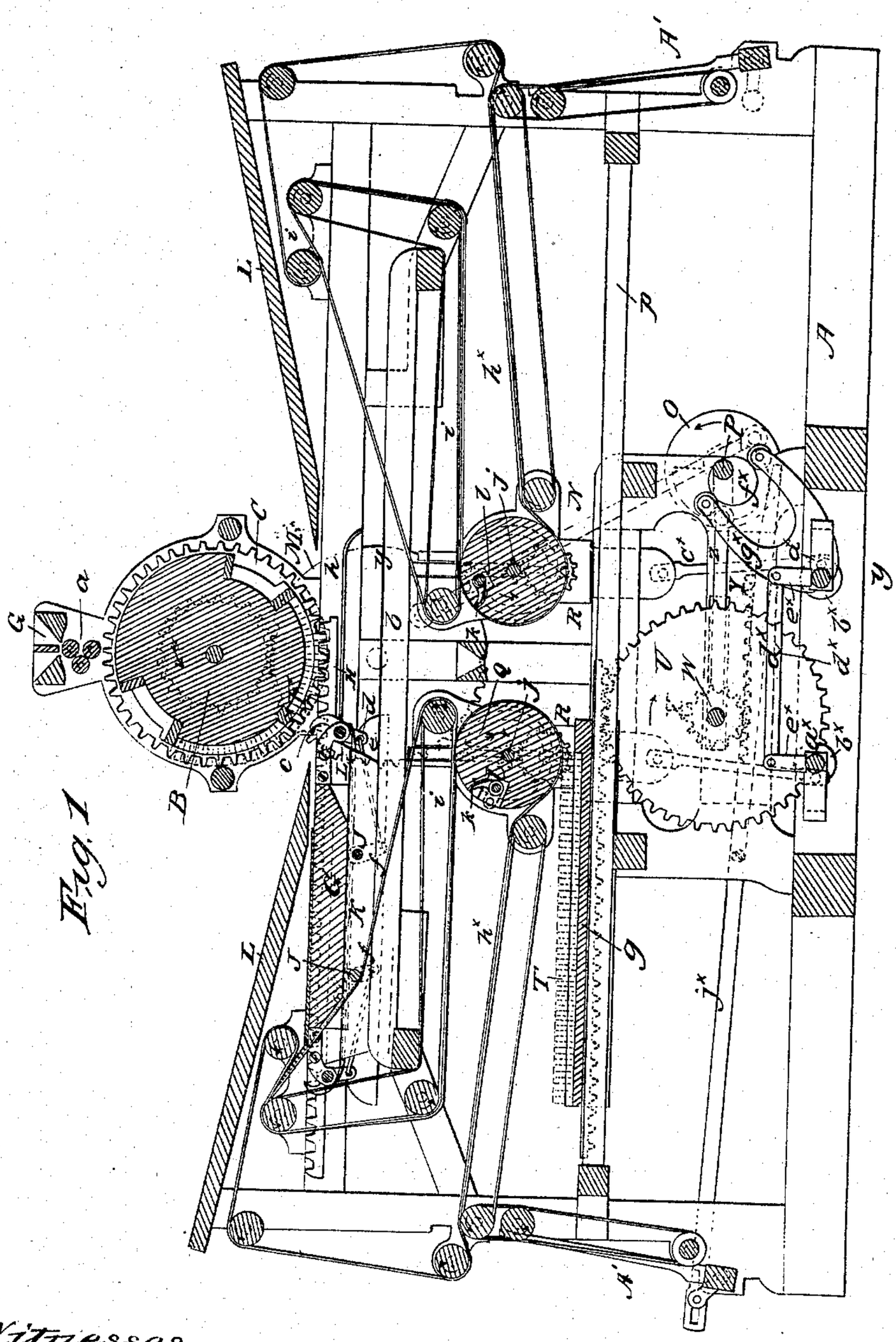

Fig. 1.

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per Munn & Co
attorneys

2 Sheets—Sheet 2.

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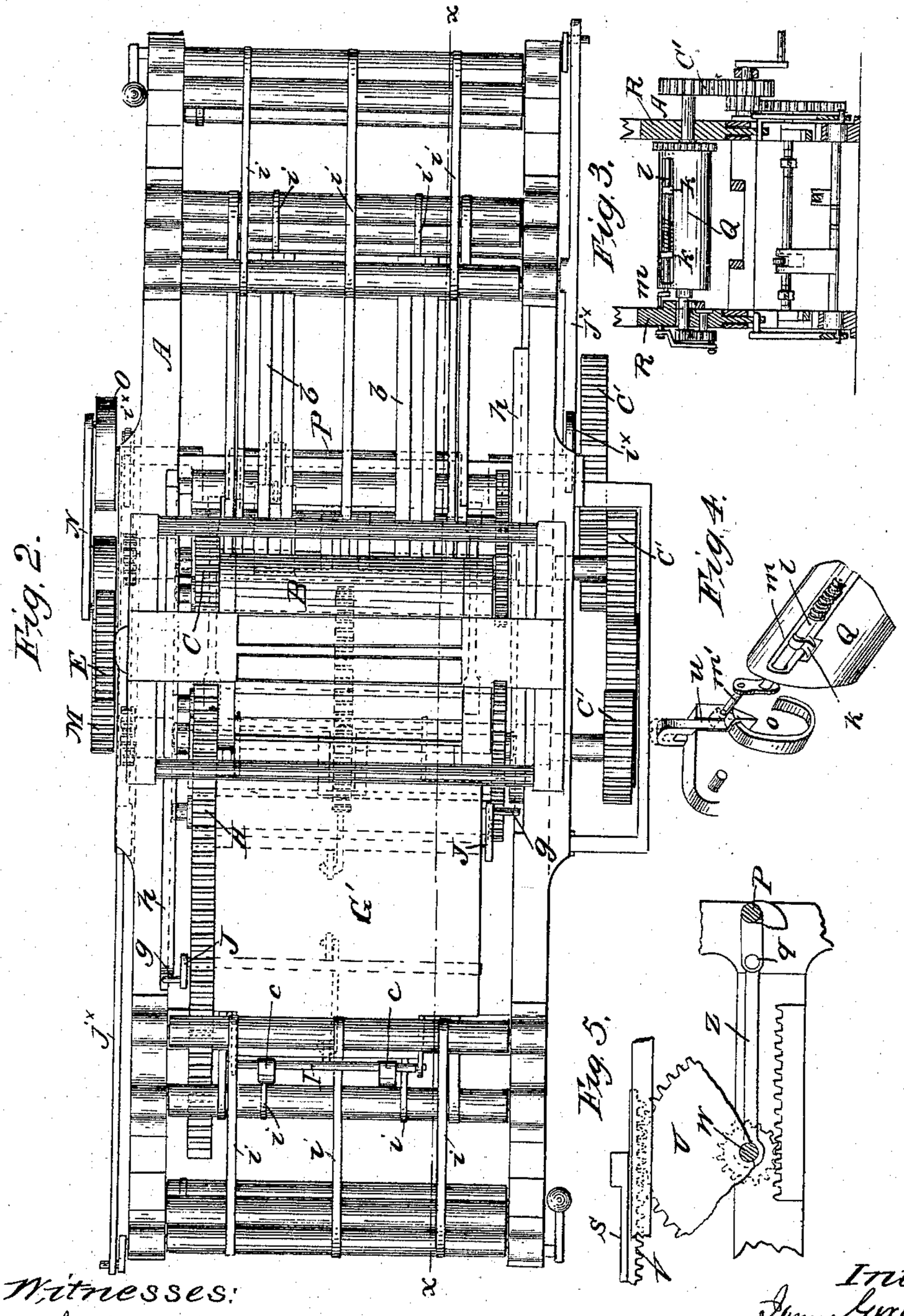

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES GORDON, OF CALEDONIA, NEW YORK.

PRINTING-PRESS.

Specification forming part of Letters Patent No. **36,839**, dated November 4, 1862.

To all whom it may concern:

Be it known that I, JAMES GORDON, of Caledonia, in the county of Livingston 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 of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2. Fig. 2 is a plan or top view of the same; Fig. 3, a diminished transverse section of a portion of the same, taken in the line *y y*, Fig. 1; Fig. 4, a detached perspective view of a portion of the same; Fig. 5, a detached side view of the parts which operate the form-bed of the press.

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

This invention relates to an improved printing-press of that class commonly termed "power-presses," and which are designed for rapid work—such as the printing of newspapers, books, &c.

The object of the invention is to obtain a printing-press of the class specified by which both sides of a sheet may be printed in passing once through the press, and the parts so arranged that the press may be fed at both ends, so as to render the printing operation continuous, the printed sheets being also discharged from both ends of the machine.

The invention consists, substantially, in the employment of a cylinder having a form fitted in its periphery and so operated as to have a reciprocating partially-rotating movement, and working in connection with a reciprocating bed which receives the sheets and upon which the sheets receive the impression from the form-cylinder, the above parts being used in combination with a reciprocating form-bed and pressure-rollers, all arranged in such a manner as to effect the desired end.

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 printing-press, which may be constructed in any proper way to support the working parts of the machine. On the upper part of this framing there is placed a cylinder, B, having a toothed wheel, C, at one end of it, said wheel being in contact with the cylinder, and at one end of the shaft D of said cylinder there is secured a pinion, E, the use of which will be presently shown.

In the periphery of the cylinder B a type-form, F, is placed and "locked" up or secured in the ordinary way. This type-form is shown in red in Fig. 1.

Directly over the cylinder B the ink fountain or reservoir G is placed, having rollers *a* underneath it, by which the ink is distributed properly upon the form F from the fountain or reservoir. These ink-rollers may be arranged in the usual way, and therefore do not require a minute description.

G′ represents a horizontal bed which is fitted on ways or guides *b b*, placed longitudinally in the frame A at its upper part.

To the bed G′ at one side there is secured a rack, H, into which the wheel C of the cylinder B gears. At each end of this bed G′ there is a shaft, I, having fingers *c* attached to them. Each shaft I is provided with a pendent arm, *d*, and these arms are connected by links *e e* with arms *f f* of two shafts, J J, which are fitted in bearings underneath the bed G′, and have each a crank, *g*, at their outer ends, which work upon and underneath guides *h* at the sides of the frame A. The two arms *d d* of the shafts I I are connected by a spring, K. (Shown in Fig. 1.)

On the top of the frame A there are placed two inclined feed-boards, L L, one at each side of the cylinder B, as shown in Fig. 1, said feed-boards being inclined downward from their outer to their inner ends, the latter being just above the upper surface of the bed G′.

In order to avoid confusion I will describe the operation of the cylinder B and bed G′ previous to describing the other parts of the press. The cylinder B has a reciprocating partially-rotating movement given it by means of a wheel, M, which gears into the pinion E the wheel M having a reciprocating partially-rotating movement given it by a pitman, N, which is driven from a crank-wheel, O, at one end of a shaft, P, in the lower part of the frame A. As the cylinder B is thus operated, a reciprocating movement is given the bed G′ in consequence of the wheel C of cylinder B gearing into the rack H of the bed. At the termination of each movement of the bed G′ the fingers C of the shaft I, which is at the lower and inner end of the feed-board L containing the sheet to be fed into the press, is made to grasp the edge of the sheet in consequence of said fingers being actuated by the spring K, which causes the fingers to be shoved forward over the edge of the bed, the fingers

being retained in position by the crank *g*, which, when the fingers are closed, is on the upper surface of its guide *h*, the crank *g* of the open fingers at the opposite end of the bed being underneath its guide *h*. The sheet is drawn underneath the cylinder B, between it or rather between its form F and the bed G′, and receives the first impression from said form. The cylinder B receives a sheet to be printed just previous to the commencement of each movement, and at the termination of each movement of the bed G′, the sheet which is thus printed at one side is caught between tapes *i i*, and by them is conveyed to a pressure-roller, Q, which forms a part of the other mechanism of the press, described as follows: There are two pressure-rollers, Q Q, the shafts *j j* of which are fitted in independent bearings R R, which are so arranged in the frame A as to be allowed to rise and fall. These rollers Q Q are provided with fingers *k*, placed on shafts *l*, which are fitted in longitudinal grooves *m* in the rollers Q, the shafts *l* being each provided with a crank, *m′*, at one end, through the medium of which and a slide, *u*, and curved bar *o* (see Figs. 3 and 4) the fingers are operated at the proper time to grasp and release the sheets. This manner of operating the fingers I do not consider as forming a part of the invention, as many plans may be devised for effecting that result. Directly underneath the two rollers Q Q there is a bed, S, which is fitted on suitable ways or guides, *p p*, and has a type-form, T, on its upper surface, from which the opposite sides of the sheets are printed. This bed S has a reciprocating movement, and it is operated by means of a toothed wheel, U, gearing into a rack, V, attached longitudinally to the under side of the bed S. The wheel U is placed on a shaft, W, which has a pinion, X, on each end of it, and these pinions gear into stationary racks Y Y, secured one to each side of the frame A. (See Fig. 5.) This shaft W is connected by two rods, Z Z, which are attached to cranks *q q* on the shaft P of the crank-wheel O, previously referred to. The rotation of the shaft P, it will be seen, gives a reciprocating motion to the shaft W, while the pinions X and racks Y give a rotary motion, and the wheel U, in consequence of gearing into the rack V, communicates a reciprocating movement to the bed S. The sheets when grasped by the rollers Q are carried around between them and the form T on the bed S, and the blank sides of the sheets are then printed, each roller Q receiving a sheet, one roller receiving it from one side of the press and the other from the other side alternately, and at the same time when the bed reaches a proper point relatively with each roller. The rollers Q Q are placed in the rising and falling bearings R, in order to admit of each roller being raised free from the bed and form during the return movement of the latter. This rising and falling movement is effected by means of two shafts, $a^{\times}$ $a^{\times}$, placed in the lower part of the frame A, and having a crank-pulley, $b^{\times}$, at each end, to which pitmen $c^{\times}$ are connected, the upper ends of the latter being attached to the lower parts of the bearings R R. The two shafts $a^{\times}$ $a^{\times}$ are connected by a bar, $d^{\times}$, the ends of which are attached to arms $e^{\times}$ on the shafts $a^{\times}$, and the shaft P has an eccentric, $f^{\times}$, upon it, which works within a forked lever or arm, $g^{\times}$, attached to one of the shafts $a^{\times}$. The operation of this eccentric $f^{\times}$ within the forked lever or arm $g^{\times}$ causes the shafts $a^{\times}$ $a^{\times}$ to be moved or actuated, and the crank-pulley $b^{\times}$ of said shafts, in connection with the pitmen $c^{\times}$, raise and lower the rollers Q at the proper time, the crank-pulleys $b^{\times}$ of one shaft $a^{\times}$ having such a relative position to those of the other as to insure the movement of each roller at the proper time. The printed sheets are taken from the bed S by tapes $h^{\times}$, and conveyed by them to flies A′, by which they are discharged from the machine. These flies may be operated from the shaft P by eccentrics $i^{\times}$ and rods $j^{\times}$.

The several parts are all set in motion from a driving-pinion, B′, at one side of the frame A, gearing C′ being arranged in any suitable way. Thus it will be seen that the press will print two sides of a sheet at one operation, and also that the press is double-acting—that is to say, may be fed at each end, so as to render the printing operation continuous.

The arrangement of parts is simple, not involving great expense in construction, and the press may be advantageously adapted for working on a smaller scale than the ordinary power-presses will admit of.

I do not claim the flies A′, nor the mode of operating them, nor do I claim the fingers for grasping the sheets; but,

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

1. A partially-rotating cylinder, B, provided with a type-form, F, and operating in connection with a reciprocating bed, G′, which holds or retains the sheets while they are receiving the impression from the form F on cylinder B, in combination with the reciprocating form-bed S and pressure-rollers Q Q, all arranged as shown and in connection with conveying-tapes, to operate as and for the purpose herein set forth.

2. The manner of adjusting or raising and lowering the rollers Q Q, as shown and described—to wit: by means of the pitmen $c^{\times}$, attached to the bearings R and to cranks $b^{\times}$ on shafts $a^{\times}$ $a^{\times}$, which are connected by a bar, $d^{\times}$, secured to the ends of arms $e^{\times}$, which project from said shafts, and one of the latter having a forked arm, $g^{\times}$, attached to it, in which an eccentric, $f^{\times}$, on shaft P works.

JAMES GORDON.

Witnesses:
JOHN CHRISTIE,
JOHN SHAW.