2 Sheets--Sheet 1.

C. WADDIE.

Printing-Presses.

No. 148,530. Patented March 10, 1874.

Fig. 1.

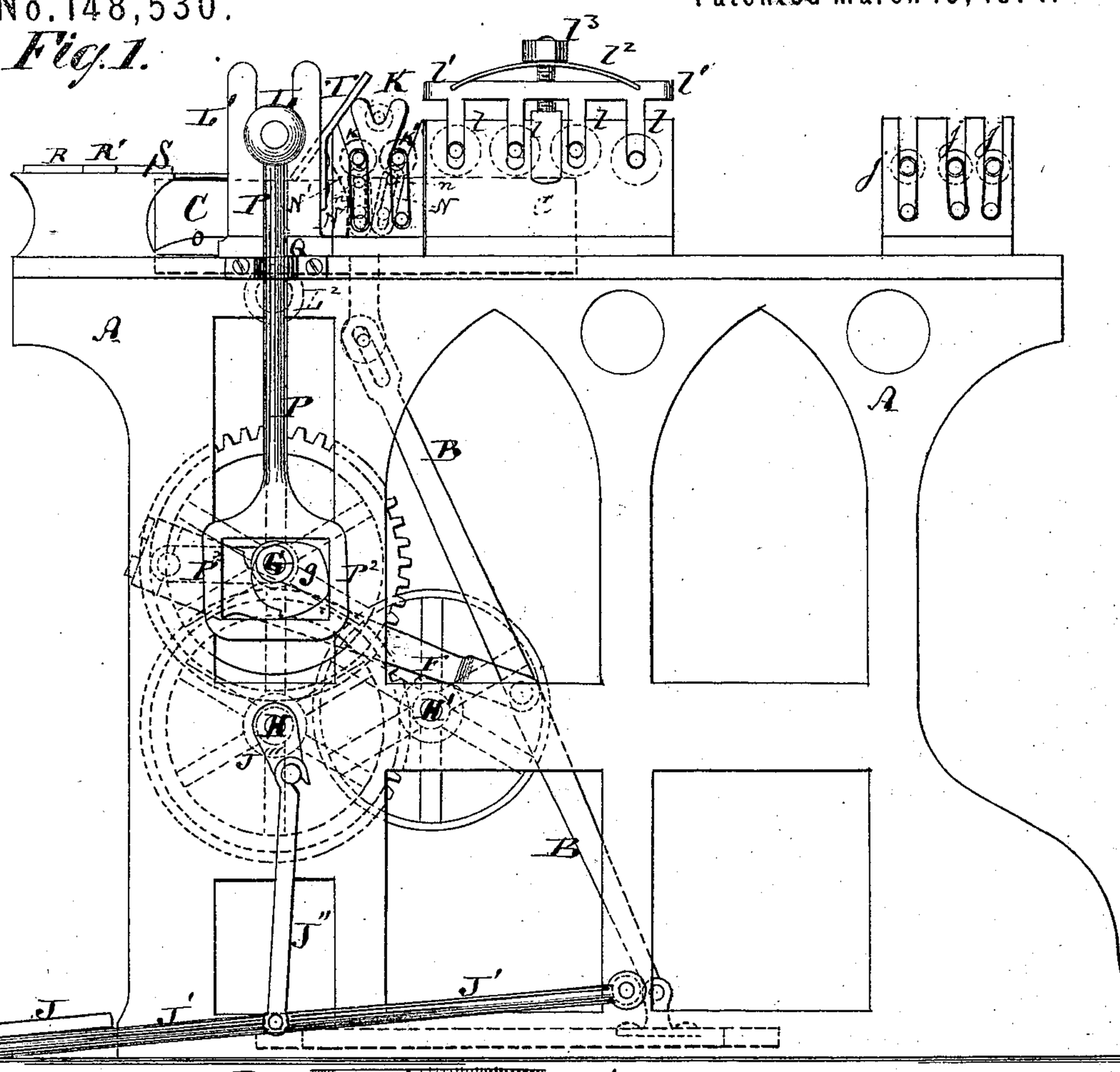
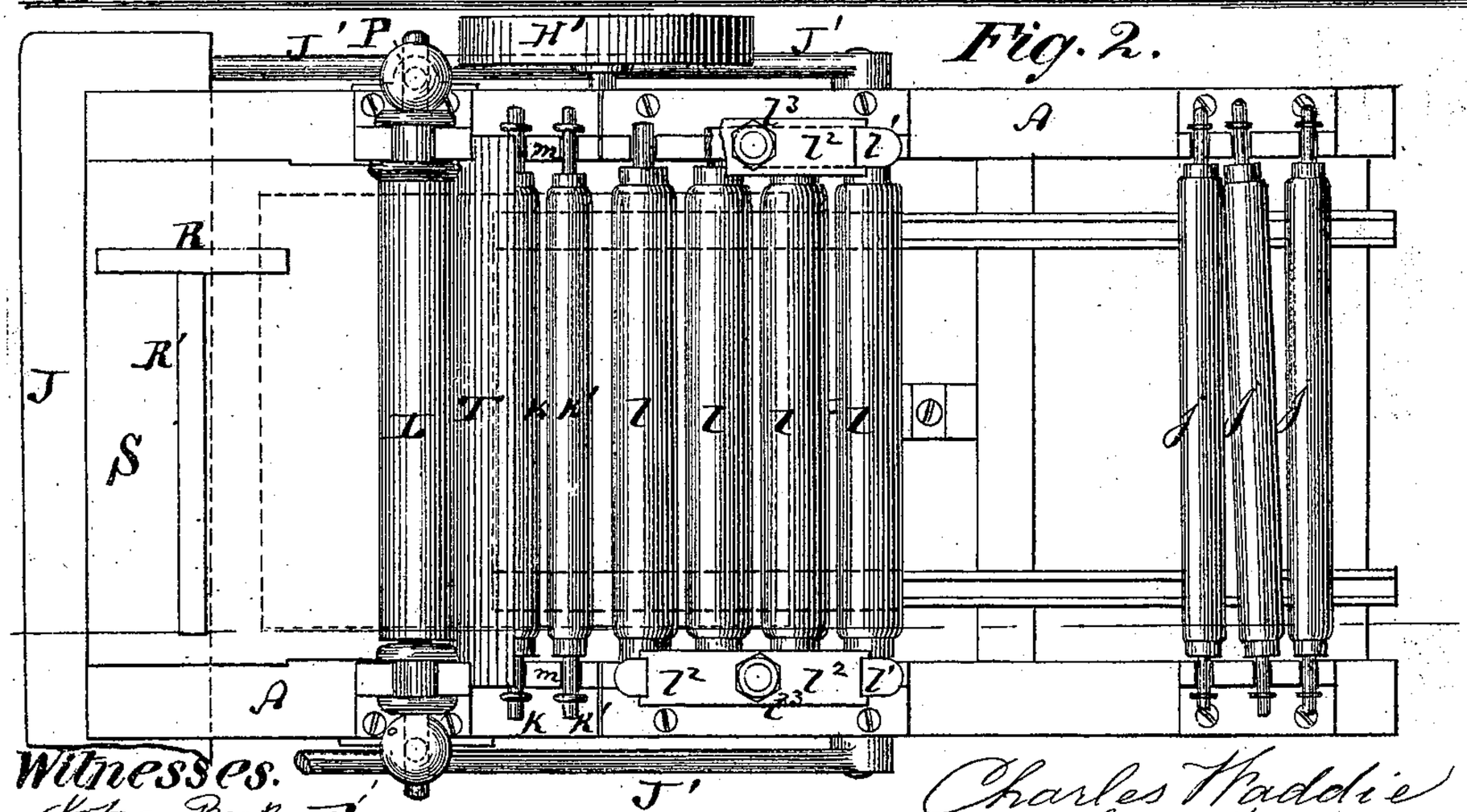


Fig. 2.



Witnesses.
John Becker
Orel Haynes

Charles Waddie
by his attorneys
Brown & Allen

2 Sheets--Sheet 2.

C. WADDIE.

Printing-Presses.

No. 148,530. Patented March 10, 1874.

Fig. 3.

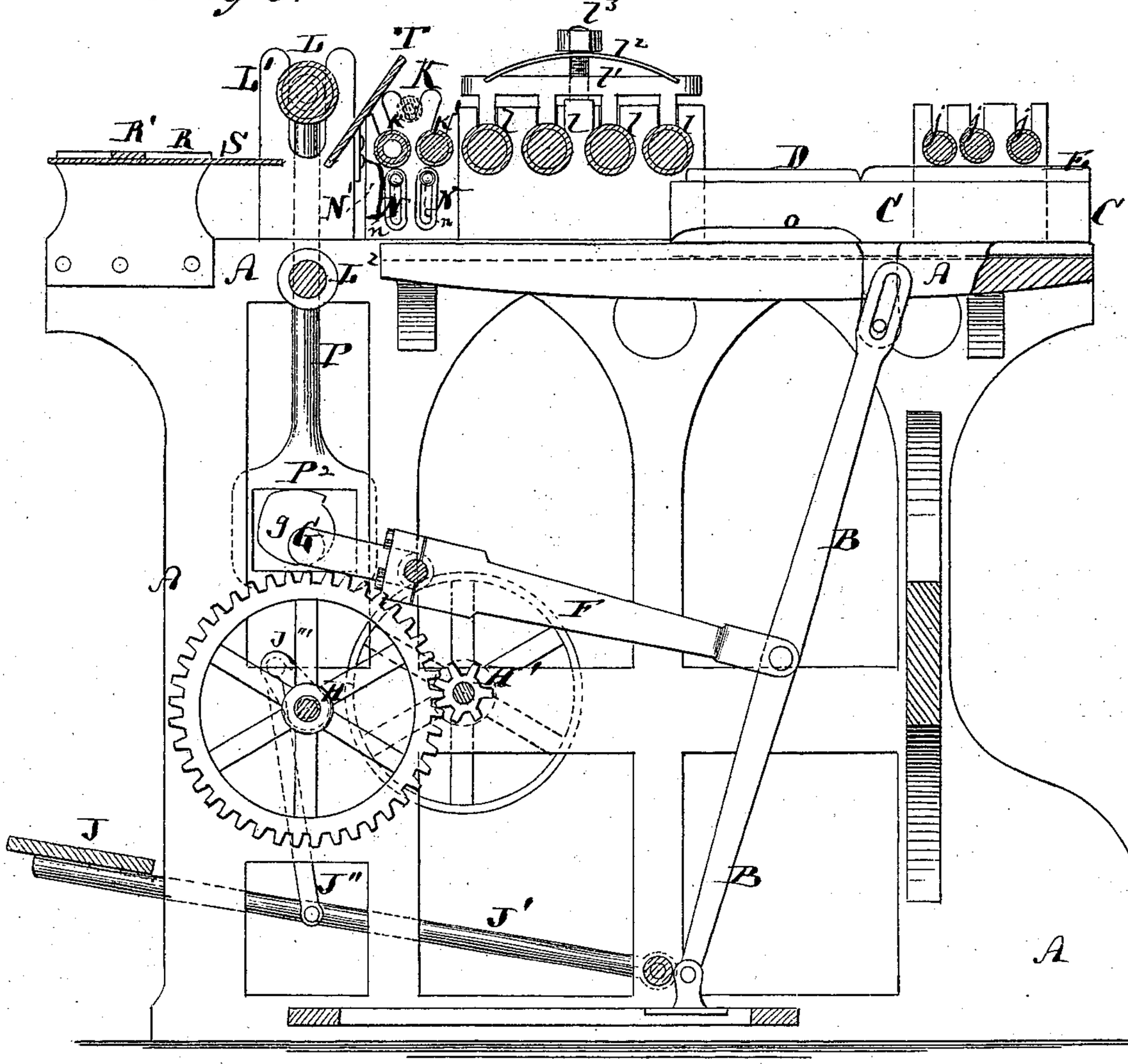


Fig. 4.

Witnesses.

John Becker

Fred Haynes

Charles Waddie
by his Attorney
Brown & Allen

UNITED STATES PATENT OFFICE.

CHARLES WADDIE, OF EDINBURGH, NORTH BRITAIN, ASSIGNOR TO VICTOR E. MAUGER, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. **148,530**, dated March 10, 1874; application filed September 2, 1873.

To all whom it may concern:

Be it known that I, CHARLES WADDIE, of Edinburgh, in the county of Edinburgh, North Britain, have invented an Improved Lithographic Press, of which the following is a specification:

This invention has reference to new and improved constructions and arrangements of many of the important parts and automatic mechanism of a self-acting lithographic printing-press, which is also suitable for type-printing. Presses constructed with these improvements, being more self-acting, and therefore requiring much less skilled labor, are more economical for many classes of work than such presses have been heretofore.

Figure 1 in the drawing is a side view of my improved lithographic press. Fig. 2 is a top view of the same; Fig. 3, a longitudinal central section; and Fig. 4, a detail longitudinal central section of the damping-roller.

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

A represents the frame of the machine, formed of two strong side standards secured together by cross-bars and stays. A vertical lever, B, is pivoted to the center of one of these cross-bars, which is situated near the bottom part of the machine, the lever having its upper end jointed by a slot or pin connection to the under side of the carriage or traveling frame C, which carries the lithographic stone D therein set. This stone is fixed, with the printing-face uppermost, in the front part of the carriage C, which also carries the inking-table E, with the distributing-surface upward, and placed immediately behind the stone D. Vibrating motion is imparted to the lever B by means of a connecting-rod, F, attached with one end to the lever B near its middle or lower part, and having the other end connected to the crank of a crank-shaft, G. Instead of the crank, an eccentric, or equivalent means, may also be used to give motion to the carriage C. The crank-shaft G, from which the automatic movements of the machine are taken in proper sequential time, and which revolves in strong bush-bearings of the side frames A A, may be driven direct, or by an intervening shaft, H′, at slow speed, by suitable motive power, or from a driving-shaft, H, which I prefer to work in small presses by means of a treadle, J, with the feet, the treadle being hung in the lower part of the frame A. The arms J′ of the treadle are connected by two rods, J″ J″, to two treadle-cranks, J‴ J‴, formed on each end of the shaft H. In larger presses, where the motion applied is greater, I connect the shaft H to the second shaft, H′, by means of gear-wheels, which reduce the velocity so obtained, to make it about the same as would be obtained by working the machine by a treadle. For the purpose of giving the necessary dampness to the stone D in lithographic printing, a hollow transverse damping-roller, K, is placed above and between two solid distributing-rollers, *k k′*. The damping-roller K, which is more fully shown in Fig. 4, is pierced with numerous holes through the body, and preferably covered with one or more layers of damping-blanket. The interior of this hollow roller K is filled with water from time to time, by having one end to screw off, thus forming a hollow transverse damping-roller, which imparts its moisture to the two rollers *k k′*, which pass across and roll over the surface of the stone D at its return from the pressing or printing roller L. These rollers *k k′* may also be covered with one or more layers of damping-blanket. The transverse rollers K *k k′* all run with their spindles in vertical slots of the frame A. Under each end of each of the damping-rollers *k k′* is a loose raising and lowering tumbling link or collar, N, which is slotted and hung to a projecting pin, *n*, of the frame A, directly beneath the spindle of the said damping-rollers *k k′*. The links N are rounded at their lower ends, and so hung as to be in the way of two rails, O, that are formed below them on each side of the carriage C. In front of these pendent links N are formed, on the frame A, fixed stops N′, which prevent the links from swinging forward, but allow them to vibrate backward. On the forward movement of the carriage C, the links N are prevented from thus tilting by the stops fixed on the frame A, and therefore are forced to rise over the rounded ends of the rail *o* of the carriage C, and serve thus to lift the damping-rollers *k*

k' some distance clear of the surface of the stone D. During the backward movement of the carriage the rollers *k k'* remain on the stone. The stone is inked in by means of the inking-rollers *l l*, placed behind the damping-rollers, having the carriage, with the stone to be printed from and inking-table ranged on it, traversing or sliding under them. The shafts of these rollers preferably have a bar, l^1, with a spring, l^2, and pinching-screw l^3 at each side, to give each roller the required pressure to ink the stone properly, which is thus regulated to the greatest nicety by screwing up or slackening back the pinching-screws l^3. Behind the inking-rollers are placed distributers or angled rollers *j j j*, for spreading the ink on the distributing-plate E, on which a little is placed from time to time; or the ink may be fed into the machine in the manner usually employed in printing-presses—that is, by a small vessel placed at the back of the last distributing-roller *j*. The transverse ink-rollers *l* and *j* work with their spindles in vertical-slotted guide-bearings in frame A. The printing is accomplished by means of a metal roller, L, placed in front of the damping-roller K, and preferably covered with a soft material, such as india-rubber, leather, &c. The shaft of the roller L runs in gun-metal bushes, or other equivalents, sliding vertically in strong slotted guides or guide-brackets L^1, secured to the frame A. The shaft of the rollers L is hung in the upper ends of two vertical rods, P P, which terminate at their lower end, just below the crank-shaft G, into hollow cam-boxes or bearing-surfaces P^2. The crank-shaft G has on each of its sides peculiar-shaped cams *g* affixed to it, which will at each revolution bring down the rods P, and thereby the roller L, on the front edge of the stone D as it is brought forward by the action of the crank G, and on top of the paper previously placed below the roller, so as to press and retain it there while the stone is thus moved forward, as shown in Fig. 1, while they will lift the rods P and roller L when the carriage C assumes a reverse motion, to allow the operator to take the work out from beneath the roller L, as shown in Fig. 3. The moving of the rod P may be facilitated and regulated by springs placed around the rods P between the journal-bearings of the roller L and the guides Q of the rods P, or otherwise. Beneath the printing-roller L another roller, L^2, is placed, upon which the carriage runs in passing below the printing-roller L, so that the pressure is taken off the slides or rails, and sustained between these two rollers, L L^2, which will then work very smoothly. Side and front gages R R', which are preferably made with movable fixing slides, are placed in front of the roller L upon a feeding-table, S, while behind the roller L an inclined guard, T, is fixed, against which the sheets of paper to be printed rest.

The operation is as follows: The stone D, after having been damped and inked on its backward traverse, and inked a second time on its way forward, then clears the damping-rollers by lifting them all, as described, enters between the rollers L L^2, causing the roller L, which is now in its lowermost position, to revolve over it, so as thus to press the sheet of paper, which has been previously placed on the inclined guard T, with its edge beneath the roller L, down on the printing-surface of the stone or type, and print and carry it during the continued forward motion of the stone upon the table S, and into the hands of the person who had previously placed the blank paper upon the guard T. For type-printing, the damping-rollers *k k'* must be removed, and a locked case of type set instead of the stone D.

In order to prevent backward movement of the shafts of the machine, a pinion and ratchet-wheel may be attached to the frame A and one of the shafts.

What I claim as my invention is—

The combination of the reciprocating carriage C, and rotary and up-and-down-movable pressure-roller L, and inking-rollers *l*, with the tables S T, damping-rollers *k k'*, and block l^1, spring l^2, and screw l^3, and pendent links N N, and stops N' N', the carriage C containing the projection O for actuating the links N N, substantially as specified.

CHARLES WADDIE.

Witnesses:

WILLIAM D. ANGUS,

JOHN WADDIE.