

(No Model.)

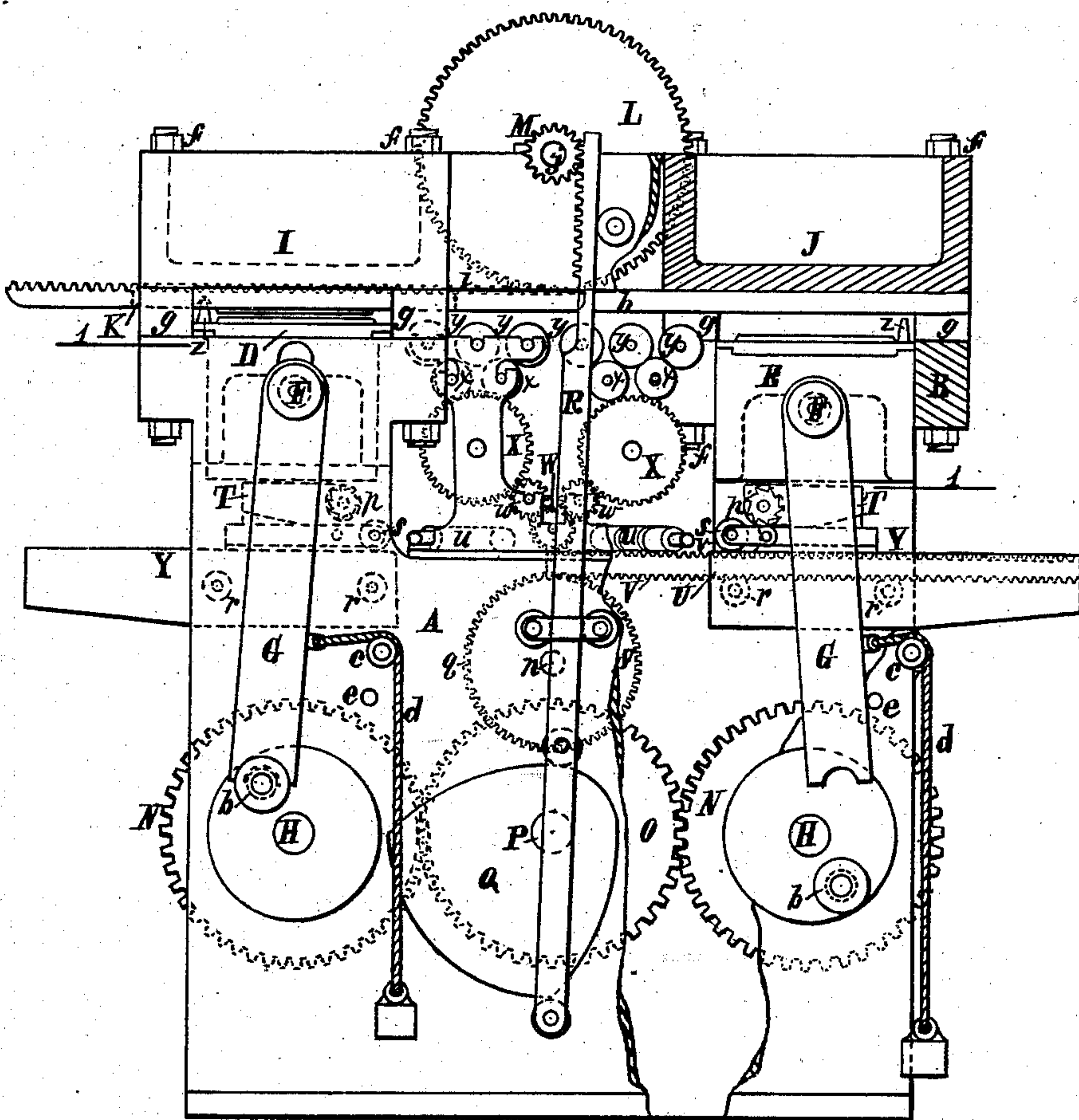
4 Sheets—Sheet 1.

T. B. DOOLEY.
Chromatic Printing Machine.

No. 238,278.

Patented March 1, 1881.

Fig. 1.



Attest;

C. Purson.
H. E. Manning.

Inventor;

Thomas B. Dooley,
per Edw. Sumner,
Atty.

(No Model.)

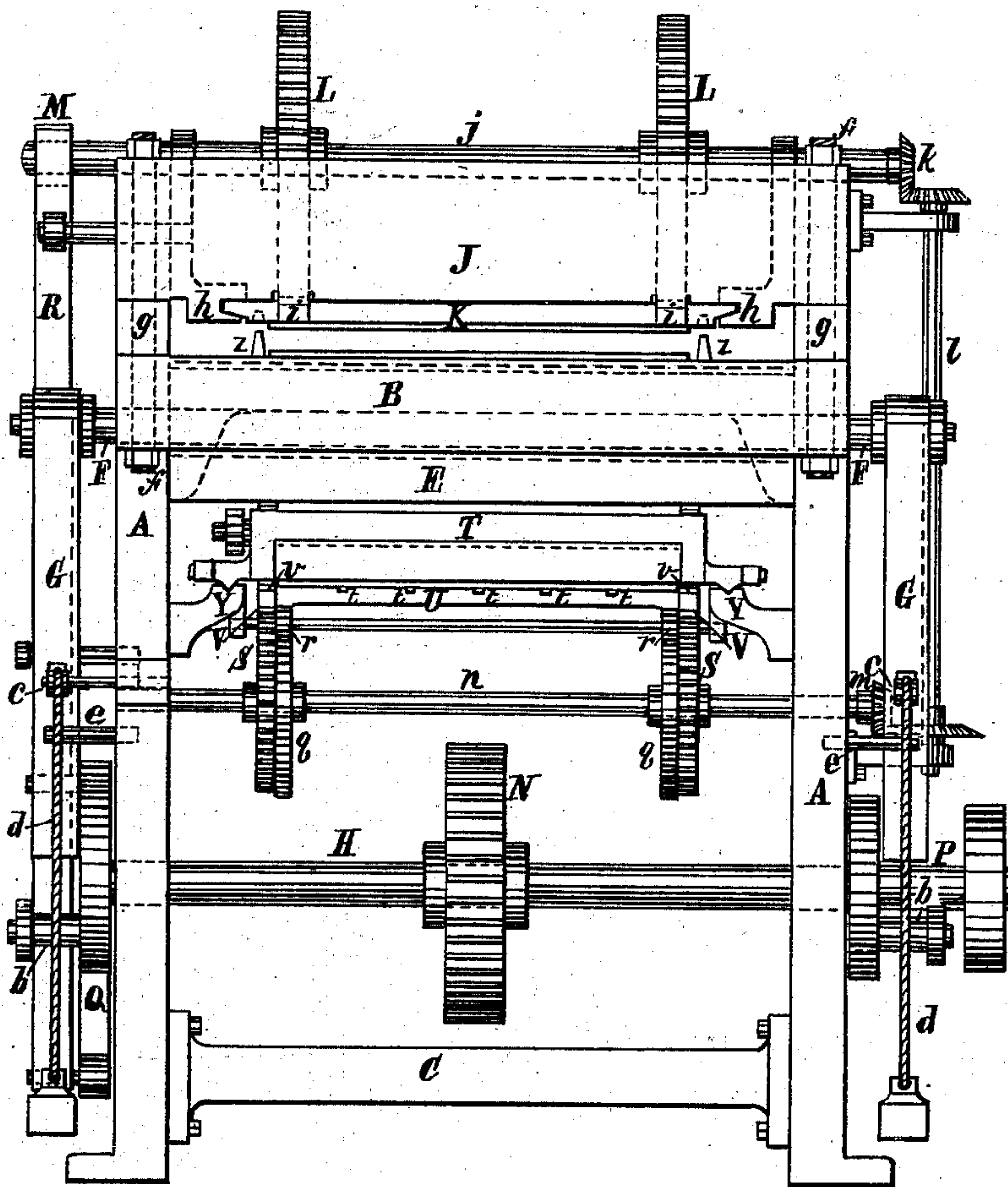
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Fig. 2.



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(No Model.)

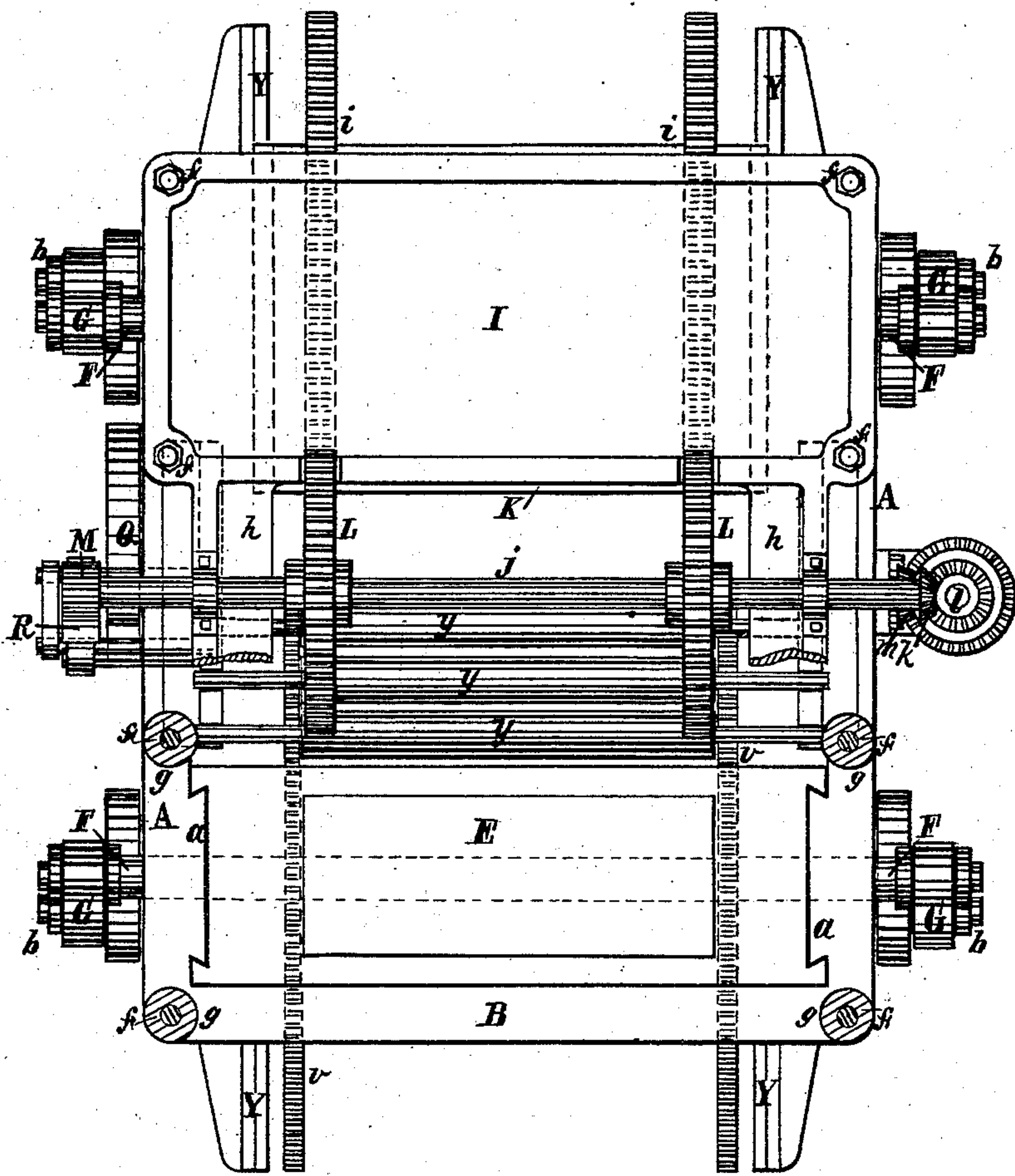
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Fig. 3.



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(No Model.)

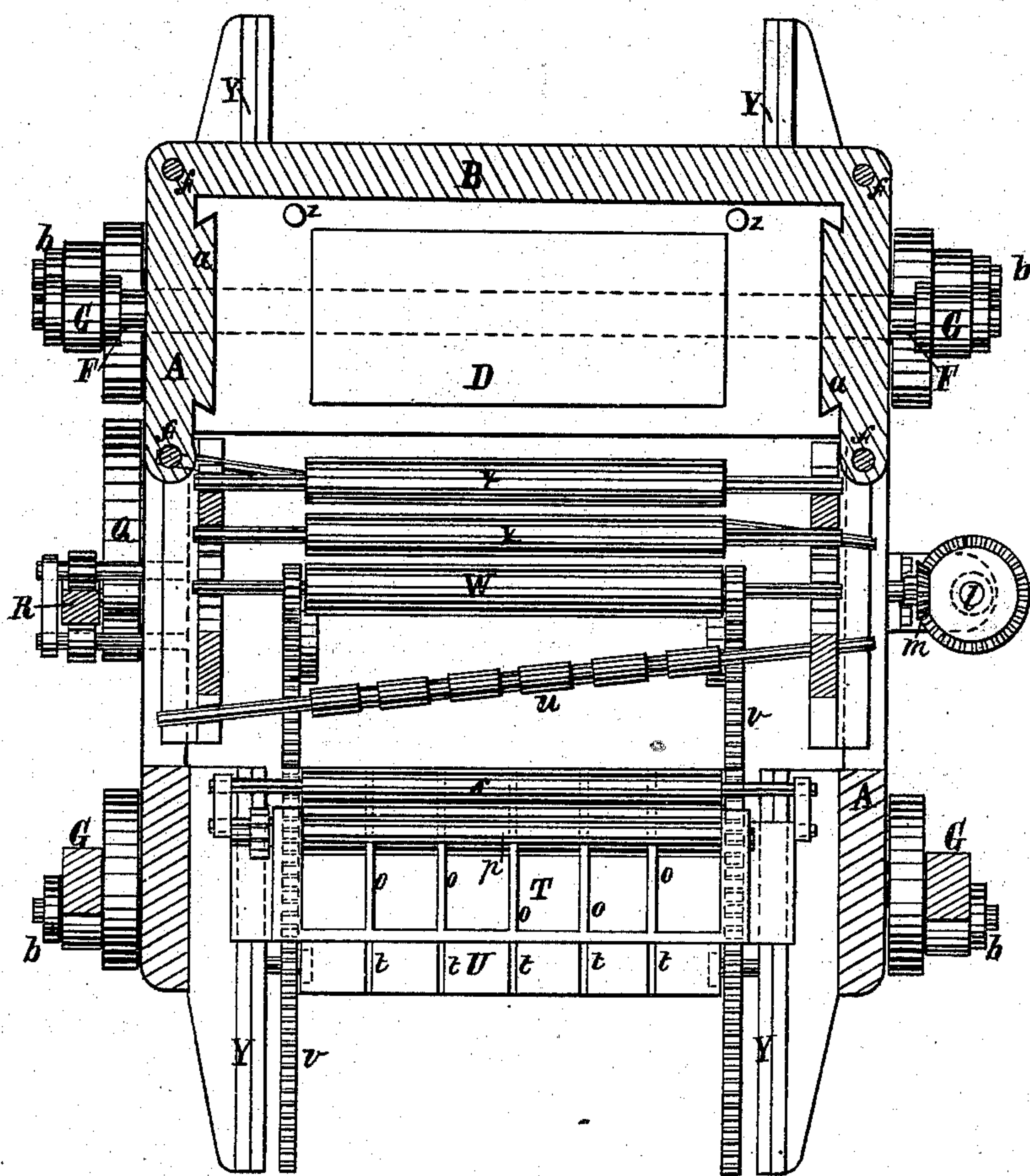
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Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS B. DOOLEY, OF CHELSEA, ASSIGNOR TO WILLIAM H. FORBES, OF BOSTON, MASSACHUSETTS.

CHROMATIC-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 238,278, dated March 1, 1881.

Application filed July 12, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. DOOLEY, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Chromatic-Printing Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention consists, chiefly, first, in a horizontally-moving bed-plate, which bears the printing form or plates, in combination with a stationary bed and vertically-operated platen, and with inking-rollers in stationary bearings, over which the printing-surface is carried, and also with a horizontally-moving ink-plate, which receives the ink from the ink-fountain or rollers connected therewith and delivers the same to the rollers, which distribute the ink and convey it to the printing-surface; and, secondly, in combining said horizontally-moving bed-plate with two stationary beds and two vertically-operated platens, so that an impression may be taken from the printing-surface at each end of its travel, the ink-rollers being arranged between the two platens and operating in connection with the ink-plate, as set forth.

In the drawings, (four sheets,) Figure 1 is a side elevation of a press embodying my invention, a part of the frame being broken away. Fig. 2 is a front view of the press. Fig. 3 is a plan view of the same, one of the stationary beds being removed. Fig. 4 is a horizontal section of frame, taken on line 1 1 in Fig. 1. In the plan views some of the lower parts are not shown.

The sides A A of the frame are of such form and are held together by braces B B C C in a manner suitable for supporting the working mechanism. The two vertically-operating platens D and E are held and guided in ways a, of bevel shape, at the sides of the frame, as shown. Projections or ends F of shafts attached to the platens D and E extend outward at the sides, on each one of which is pivoted a bar or connecting-rod, G. Each one of the connecting-rods G is formed at the lower end to receive and form a bearing for a wrist-

pin, b, of a crank fixed on an outer end of a shaft, H. It will be seen that each of the platens D and E will have a vertical movement equal in distance to a part only of the throw of these cranks, and that at the time the impression is to be given these cranks and connecting-rods will be in position to exert great pressure, forming toggle-joints. Impression-screws (not shown in the drawings) may be used for gaging the pressure in the manner that they are commonly employed.

Located at the sides of the press are pulleys c, over each of which passes a cord, d, one end of which is attached to a connecting-rod, G, and the other end to a weight, as shown. Each crank in its revolution will leave the connecting-rod operating therewith on one side of a line extending vertically from the center of the crank, and thereupon the weight and cord d will swing the connecting-rod over to the other side of said vertical line to a stop, e, and to a position where it will receive the crank-pin for the next reciprocating movement of the platen. Springs may be arranged to take the place of the weights and cords d.

Each of the two beds I and J is fixed in a horizontal position to the frame of the press by suitable fastenings, as by the bolts f passing through ears or projections at the corners of the beds and on the frame, and through blocks g, which are space-blocks between the beds and the frame or body of the machine.

There is one horizontally-moving bed-plate, K, to which are fastened, on the under surface, the forms or plates—that is, the printing-surface. This bed-plate slides on ways or guides h, fixed to the frame. These ways or guides may be of such form and bevel as shown, to keep the bed-plate in true position, being also adjustable. The bed-plate K has a reciprocating horizontal motion, by means of racks i, attached thereto, which mesh into gears L on a shaft, j. This shaft has bearings in cross-pieces joining the stationary beds I and J, and has a pinion, M, fixed thereon at one end. On each of the shafts H H is a gear, N. These two gears mesh into a gear, O, on a shaft, P. On one end of the shaft P is a cam, Q, which is of the proper form to give the required motions

and rests. The cam Q gives a reciprocating movement to a rod or bar, R, by means of studs or rollers fixed to the rod or bar and bearing on the cam, as shown, the rod or bar being suitably guided. The rod or bar R has a rack, which meshes into the pinion M. On the other end of the shaft *j* is a bevel-gear, *k*, which meshes into a bevel-gear on a vertical shaft, *l*. On the lower end of the shaft *l* is a bevel-gear, which meshes into a bevel-gear, *m*, on a horizontal shaft, *n*. The shaft *n* has thereon two gears, S S.

I have shown two ink-fountains, T T, each located under a platen, though, in many cases, one only need be employed. Each fountain has partitions *o*, as many as are required to hold the inks of the several colors used. Each fountain has the usual ink-roll *p*, which may be a straight roll having the partitions *o* fit closely thereto, so that it will receive and hold the different-colored inks separately thereon. An ink-plate, U, moves horizontally on rollers *q* and *r*, in such relation to the ink-fountains as to receive ink therefrom by means of a swinging roller, *s*, connected with each fountain, and which carries ink from a fountain-roller to the ink-plate. This ink-plate U has recesses or grooves *t* running in the direction of the reciprocating movement of the plate, so that it will present separate surfaces to receive and hold separately inks of different colors, each surface bearing ink of the desired color. Racks V, fixed to the ink-plate U, mesh into the gears S, and by these the ink-plate may receive a movement back and forth to receive the ink from the fountains, and deliver the same to a roller, W, under which it passes. While the ink-plate has this reciprocating movement the ink may be further distributed thereon by distributing-rollers *u*, which, lying diagonally thereon, will have an alternate endwise movement. The rollers *u* should have grooves of sufficient width, so as not to carry ink from one surface to another on the ink-plate. There are also other racks, *v*, fixed to the ink-plate U, which, meshing into gears on the shaft of the ink-roller W, insure the proper revolution of that roller. There are two ink-rollers, *w w*, bearing on the ink-roller W, and two larger rollers, X X, bearing against the rollers *w*. These ink-rollers may be geared together as shown, to insure their proper revolution. Other rollers, *x*, bear against the rollers X, and rollers *y* against the rollers *x*. The rollers *y* are situated so as to deliver the ink onto the forms or plates on the under side of the bed-plate K—that is, onto the printing-surface.

The ink-fountains T rest on ways Y, on which they may be slid for the ready removal or adjustment of the same.

Projections *z*, fixed to the platens, enter suitable recesses in the bed-plate, to lock the same in position while the impression is being given.

The press may be operated by power applied to the pulley on the shaft P. The ar-

range of the mechanism and the relative motion and speed of the moving parts are such that while the bed-plate is under one of the stationary beds a platen moves upward and an impression is given by means of the cranks and connecting-rods working therewith, and the ink-plate is under the ink-fountain under the other platen. After that platen has moved downward, the bed-plate moves from under that stationary bed across the ink-rollers *y*, receiving ink therefrom of the different colors, and onto the printing-surfaces, to and under the other stationary bed, for another impression given by the other platen, and so on. While the bed-plate moves from one platen and bed to the other, the ink-plate moves in the opposite direction under the ink-rollers. These ink-rollers may be of the number and in position relative to each other, as shown, or there may be a greater or less number and differently arranged.

Paper may be drawn over each platen in a direction at right angles to the direction of motion of the bed-plate by mechanism (not shown in the drawings) similar to that employed in other bed and platen presses. Such mechanism should operate so that the paper will be presented intermittently and successively to the several divisions of the printing-surface, and thus receive the several different colors.

Besides superiority in other minor respects, my invention has the following-named very desirable features: There may be a great amount of ink-distribution, since the ink-rollers, revolving in stationary bearings and not being carried over the printing-surface, may be as large and as many as desired. Since in inking only the ink-plate has the reciprocating movement, a very light weight of parts need have this movement, while at the same time the grooves in the ink-plate prevent the mingling of the different-colored inks, and the grooved rollers may distribute in an efficient manner the ink of each of the several colors.

I claim as my invention—

1. The combination of a stationary bed, a reciprocating platen, inking-rollers to revolve in stationary bearings, a bed-plate reciprocating to have the printing surface or surfaces thereon rolled by one or more of said rollers, and to be in position between bed and platen for giving an impression alternately, and an ink-plate having a reciprocating movement to deliver ink to said inking-rollers, substantially as hereinbefore set forth.

2. The combination of two stationary beds, two reciprocating platens, inking-rollers located between said platens, a bed-plate bearing the printing surface or surfaces and to pass from one bed to the other, and in contact with one or more of said rollers, and a reciprocating ink-plate located to come in contact during its movement with one or more of said rollers, substantially as hereinbefore set forth.

3. The combination of a grooved ink-plate, one or more ink-rollers revolving in stationary bearings, an ink-fountain, and one or more grooved distributing-rollers lying diagonally on said ink-plate, said ink-plate having a reciprocating movement between to come in contact with said ink-rollers, and a roller or rollers connected with said fountain, substantially as and for the purpose hereinbefore set forth.

THOMAS B. DOOLEY.

Witnesses:

EDW. DUMMER,
H. G. MANNING.