

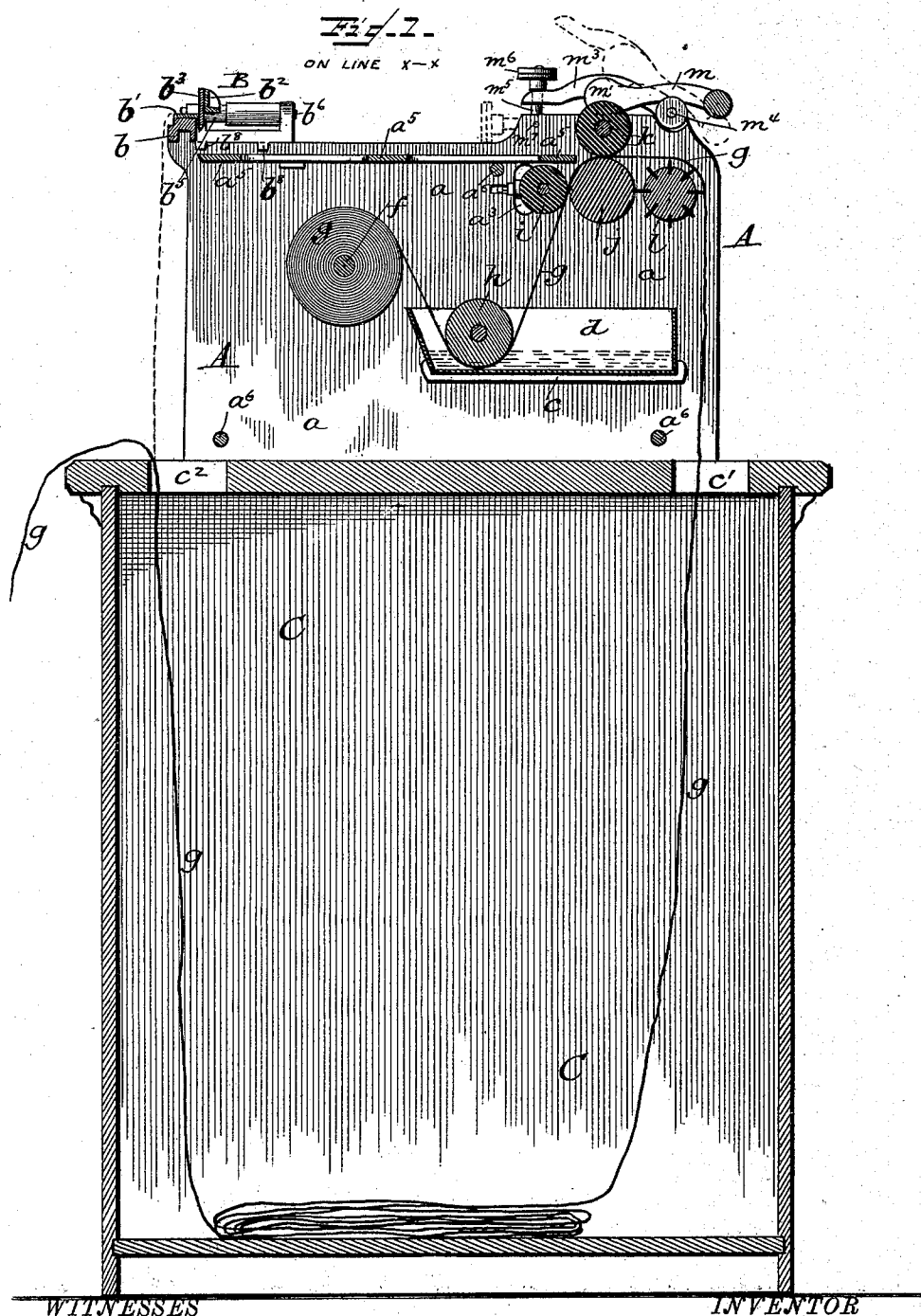
(No Model.)

3 Sheets—Sheet 1.

M. R. JEWELL.
ROLLER COPYING PRESS.

No. 416,628.

Patented Dec. 3, 1889.



WITNESSES

INVENTOR

Edwin I. Jewell
Jos. A. Ryan

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By Phil. T. Dodge
Attorney

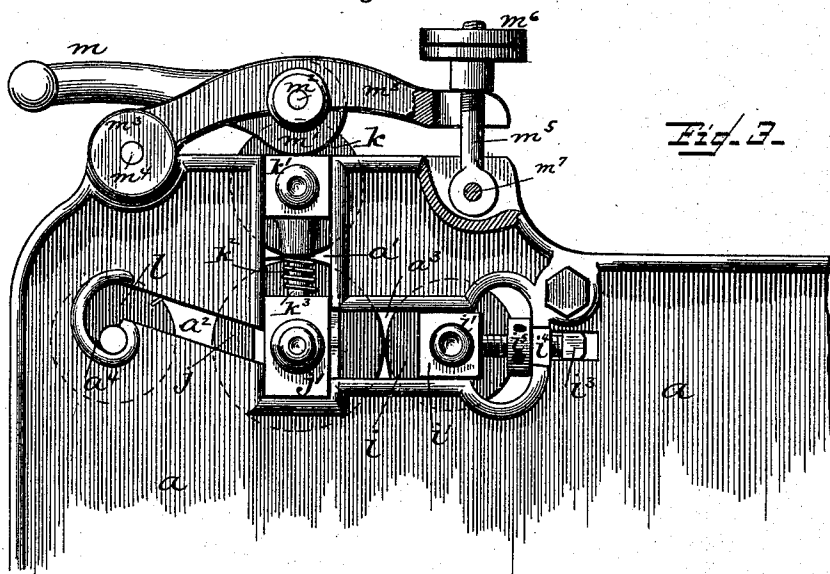
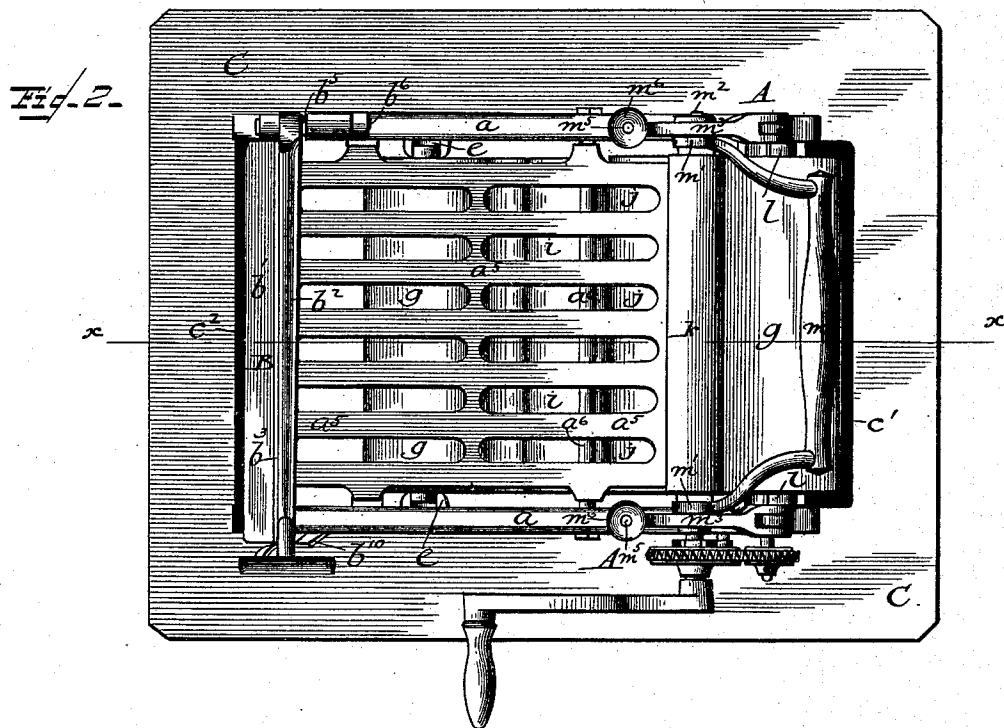
(No Model.)

3 Sheets—Sheet 2.

M. R. JEWELL.
ROLLER COPYING PRESS.

No. 416,628.

Patented Dec. 3, 1889.



WITNESSES

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 4.

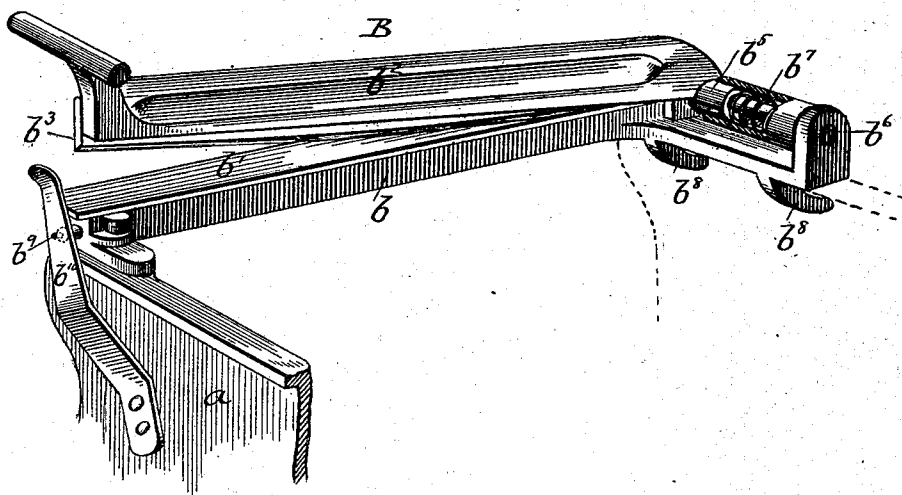
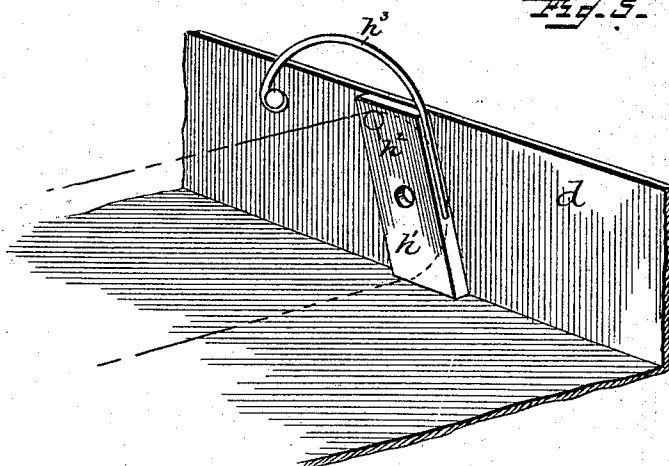


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

MAJOR ROMEYN JEWELL, OF ROCHESTER, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE OFFICE SPECIALTY MANUFACTURING COMPANY, OF SAME PLACE.

ROLLER COPYING-PRESS.

SPECIFICATION forming part of Letters Patent No. 416,628, dated December 3, 1889.

Application filed February 17, 1888. Serial No. 264,409. (No model.)

To all whom it may concern:

Be it known that I, MAJOR ROMEYN JEWELL, of Rochester, in the county of Monroe and State of New York, have invented certain

Improvements in Roller Copying-Presses, of which the following is a specification.

The present invention relates to improvements in that class of roller copying-presses in which the moistening of the paper is automatically effected by a damping-roll, and the paper thereafter conducted between pressure-rolls, as represented, for example, in Letters Patent of the United States granted to Lash, Nos. 333,312 and 354,794, on which the

present invention is an improvement, and is designed to overcome the various difficulties incident to the constructions heretofore in vogue.

The improvements relate more particularly to the construction of the frame in such manner as to permit a convenient and speedy removal and insertion of the various rolls; to admit of the pressure on the copying-rolls being nicely adjusted and of the rolls being readily relieved from pressure without destroying their adjustment; to provide convenient means for dividing the paper into suitable lengths or sheets after the copying operation, and to facilitate the introduction of the paper in the first instance between the rolls.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section through my machine and its sustaining cabinet on the line *x x* of Fig. 2. Fig. 2 is a top plan view of the complete machine. Fig. 3 is a side elevation of that portion of the main frame in which the upper rollers are mounted, the outer portions being broken away to expose the internal arrangement of the adjusting devices. Fig. 4 is a perspective view of the paper-cutting knife or shears and of the means for securing the same removably to the frame of the machine. Fig. 5 is a perspective view showing a portion of one side of the water-tank and the pivoted roller-bearing therein.

Referring to the drawings, A represents the press proper; B, the knife or shearing device

on one end thereof, and C the case or cabinet upon which the press is mounted.

The frame of the press consists, essentially, of two vertical side plates *a*, placed at a suitable distance apart and rigidly connected by cross-rods *a'* or equivalent cross-connections, which will hold them firmly in their proper relations. On their inner faces the side plates *a* are provided with flanges *c*, which support the ends of a removable pan or tank *d*, intended to hold the water for dampening the paper. The side plates are also provided with open bearings *e* to receive the ends or end journals of a cross-roll *f*, on which is wound a long sheet or web of copying-paper *g*. The paper passes from the roll downward through the water in the vat and beneath the horizontal roll *h* therein, this roll being supported in a manner which will be presently described. From the roll *h* it ascends between a squeezing or drying roll *i*, and a pressure or copying roll *j*, their joint effect being to remove the surplus moisture from the paper and leave it in the proper condition for copying purposes. The paper is continued over the top of the pressure-roll *j* between it and an overlying pressure-roll *k*, after which it is passed over a longitudinally-ribbed roll *l*, revolving at a relatively high speed and adapted to draw the paper constantly forward with a gentle strain.

The pressure-roll *j* and drying-roll *i* are arranged, as shown, side by side, the former in stationary and the latter in adjustable bearings, so that by varying the pressure the moisture may be removed from the paper to a greater or less extent previous to the copying operation.

The several rolls, with the exception of the roll *l*, have their journals mounted in bearing blocks or boxes, and in order to facilitate the introduction and removal of the rolls the boxes on each side are arranged for introduction and removal through a single opening in the frame. The construction to this end is plainly represented in Fig. 3, in which it will be perceived that the frame-plate is provided with a vertical slot *a'*, extending from the upper edge downward, and with two slots *a''* and

a^3 , opening laterally from opposite sides of the first-named slot. Each slot a^2 terminates at its outer end in a bottom seat a^4 , adapted to receive the journal of the roll l , which is inserted by dropping it through the slot a' and then passing it through the slots a^2 to its place.

The bearing-blocks i' of the roll i are dropped through the slot a' and shoved laterally through the slots a^3 to their places. In order that these bearings i' may be adjusted horizontally to regulate the pressure of the roll i , adjusting-bolts i^3 are tapped through ears i^4 on the frame and arranged to act against the bearings i' . Check-nuts i^5 are applied to these bolts to prevent them from working out of adjustment.

The boxes or bearings j' of the lower pressure-roll j are elongated vertically and the slot a' carried below the lateral slots, so that when the bearing is dropped to its place in the slot a' it will receive, as shown in Fig. 3, a firm support on both sides.

The bearings k' of the upper pressure-roll k are seated and slide vertically in the upper ends of the slots a' , and are supported by spiral springs k^2 , encircling spindles k^3 , which are extended upward from the lower bearings j' loosely into a hole in the upper bearings k' . The downward pressure upon the roll k is secured by means of a bail m' , having eccentric ends m , which act on the bearings k' . The bail is provided at its ends with journals m^2 , seated in the supporting-arms m^3 , which are in turn connected to the frame at one end by pivots m^4 and at the opposite end by bolts m^5 , provided with adjusting-nuts m^6 . By means of these nuts the arms m^3 may be adjusted with great nicety to secure the exact pressure required upon the copying-roll k . By throwing the bail backward its eccentrics are caused to relieve the roll k from the pressure to prevent it from being flattened on its side when it remains for a long time in an inactive position, and also to admit of the roll rising in order that a sheet may be withdrawn at any time, when copied, to any point in its length.

The adjusting-bolts m^5 are connected at their lower ends to the frame by pivots m^7 , and the ends of the arms m^3 , through which they pass, are forked, so that the bolts may be thrown downward out of action, as shown in dotted lines in Fig. 1, at will. This action, without destroying the adjustment of the nuts, releases the arms m^3 , so that they may be thrown upward in order to permit the removal of the various roll-bearings through the slot a' .

Heretofore it has been somewhat difficult to pass the copying-paper beneath the roll h in preparing the machine for action. To avoid this difficulty, I now mount the roll h in bearings which will admit of its rising freely, so that the fingers of the operator may pass the paper thereunder. I recommend for this end the mounting of the roll, as shown in Fig. 5, with bearing-arms h' connected at

their upper ends to the sides of the pan or vat by pivots h^2 . A spring h^3 , of the form shown or other suitable form, is connected to the pan and bears on the arms h' to hold them down in position. The use of these springs is not, however, essential, as the weight of the roller will ordinarily keep it down in place. The arms may, if desired, be pivoted to the side plates of the frame instead of to the pan, and they may be modified in form and arrangement at will, provided only they permit the roll h to rise and fall freely.

As this machine is intended to operate mainly on a long web of copying-paper which is to be subdivided after becoming dry, I provide for the machine a special cabinet, such as shown in Fig. 2, having its top adapted to sustain the machine, and having at the delivery end of the machine an opening c' , through which the paper may descend to the interior. To facilitate the removal of the paper, I recommend the provision of a second slot or opening c^2 at the opposite side of the cabinet. The end of the sheet being passed upward through this opening and retained at the outside enables the operator to quickly withdraw it, and this regardless of the quantity which may be contained within the cabinet.

In order that the web containing the copies may be conveniently divided into sections or sheets of the ordinary length, I mount on the machine, at one end, the knife or shears B before referred to, and provide at the top of the machine a horizontal skeleton plate a^5 , to receive the sheets as they are cut from the web. The shears may be of any suitable construction; but in the form shown they consist of a cross-bar b , provided with a fixed blade b' , and of a vertical swinging bar b^2 , provided with a vertical blade b^3 . The upper bar b^2 is provided at one end with a horizontal journal b^5 , turning on a pivot b^6 , sustained by ears on the lower plate. A spiral spring b^7 , suitably inclosed for the purposes of protection, acts laterally against the blade b^2 , holding it as it descends with a yielding pressure against the edge of the plate b' , this action insuring a clean separation of the paper whether moist or dry. The end of the arm b^2 may be fashioned into a handle such as shown in the drawings, or into any other form which will admit of its being conveniently operated by hand. The cutting device may be attached to the machine in any suitable manner; but in order that it may be readily removed I construct the lower bar b with hooks b^8 at one end to interlock with the frame and provide it at the opposite end with a stud b^9 to engage a spring-arm b^{10} , fastened to the frame. By drawing the spring backward the bar is released at one end and may be then lifted and disengaged at the other. When the knife is located upon the press in the position shown, the web of paper may be conveniently drawn upward through the opening c^2 through the cutter and supported upon

the plate a^5 . The plate and sides of the press serve as guides for cutting the paper to the proper length, for supporting it after being cut, and for insuring the cutting action at right angles to its edges.

It is to be noted that in my machine the lower roll h is merely a guide to compel the passage of the paper through the water, and that it is not a "damping-roll" in the sense in which that term is used in the art.

Having thus described my invention, what I claim is—

1. In a roller copying-press, and in combination with the pressure-roll, the eccentrics for depressing the same, the arms which sustain the eccentrics, and the screws for adjusting the arms, whereby the degree of pressure may be accurately adjusted and the roll relieved of or subjected to pressure at will without disturbance of the adjusting-screws.

2. In a roller copying-press, and in combination with the pressure-roll, the bail with its eccentrics, the bail-supporting arms pivoted to the frame, and the adjusting nuts and bolts adapted to swing into and out of engagement with the arms, as described.

3. In a roller copying-press, the main frame having its side plates provided each with the slot extending downward therein from the upper edge and with roll-adjusting screws in the outer walls of the slots, in combination with the co-operating pressure-rolls, the roll boxes or bearings adapted for insertion and removal successively through the open ends of the slots, and pressure devices hinged to the frame and overlying the slots, whereby the ready removal and insertion of the rolls is permitted without disturbing the adjustment of the screws.

4. In a roller copying-press, the combination of the bed or table a^3 , the copying-rolls k and j at one end of said bed, the stationary transverse bar b at the opposite end of the bed, and the hinged knife-bar b^2 , arranged to co-operate with the bar b , whereby the table is rendered available to support and guide the paper passing between the copying-rolls,

and also rendered available to support and guide and gage the length of the sections cut from the end of the copy-sheet.

5. In combination with the roller copying-press having the delivery devices at one end and the knife at the other, the cabinet provided with two openings for the passage of the paper.

6. The sustaining-cabinet for a roller copying-press having in its top near opposite ends two openings for the passage of the paper, whereby it is adapted to admit, hold, and deliver a long web of paper without entangling the same.

7. In a roller copying-press, and in combination with the water-pan, a roller H , mounted in said pan independent of the wringing and copying rolls and movable freely in an upward direction from its operative position, whereby the operator is enabled to lift said roll to pass the copying-paper thereunder.

8. In a roller copying-press, and in combination with the water-pan, the roller h , its pivoted sustaining-arms, and the springs acting thereon.

9. In a roller copying-press, the combination of a support for a roll of paper, a water-pan containing a roll beneath which the paper is carried through the pan, two elevated pressure copying-rolls, and a squeezing or wringing roll acting forcibly against one of the copying-rolls and independent of the roll in the pan.

10. In a roller copying-press, a water-pan and means for guiding the web of paper through the water therein, in combination with two rolls i and j , independent of the damping devices, to squeeze the moisture from the paper, and a third roll k , bearing upon the roll j , to effect the copying action.

In testimony whereof I hereunto set my hand, this 30th day of December, 1887, in the presence of two attesting witnesses.

M. ROMEYN JEWELL.

Witnesses:

Z. L. DAVIS,
MAY HALLE.