

J. T. & E. C. BRUEN.
PRESS FOR COLOR PRINTING.

No. 178,229.

Patented June 6, 1876.

Fig. 1.

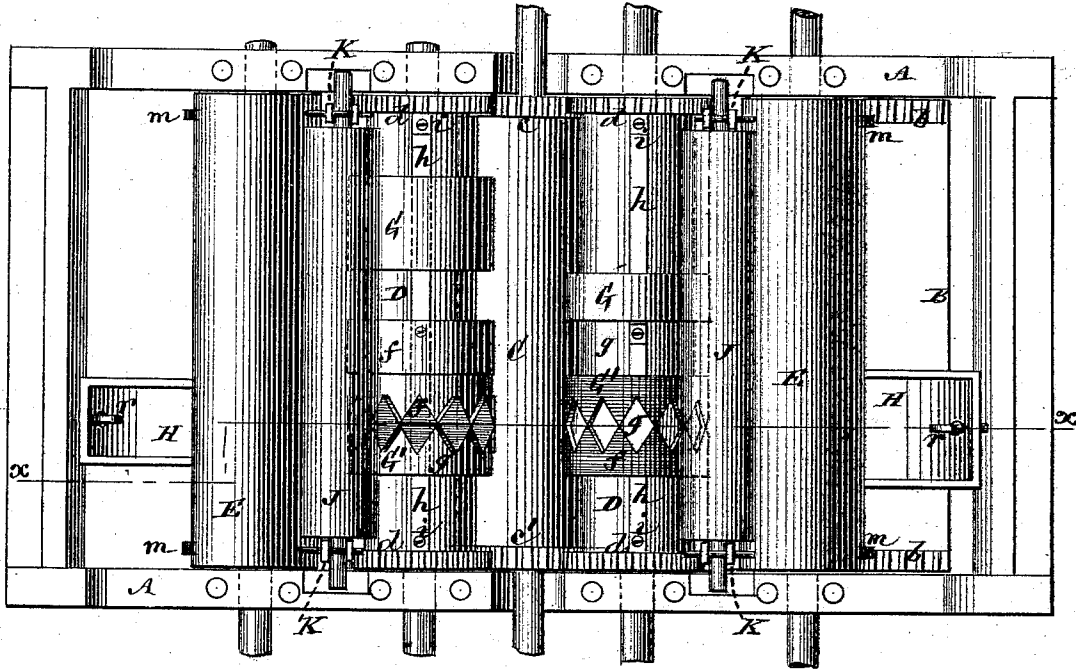


Fig. 2.

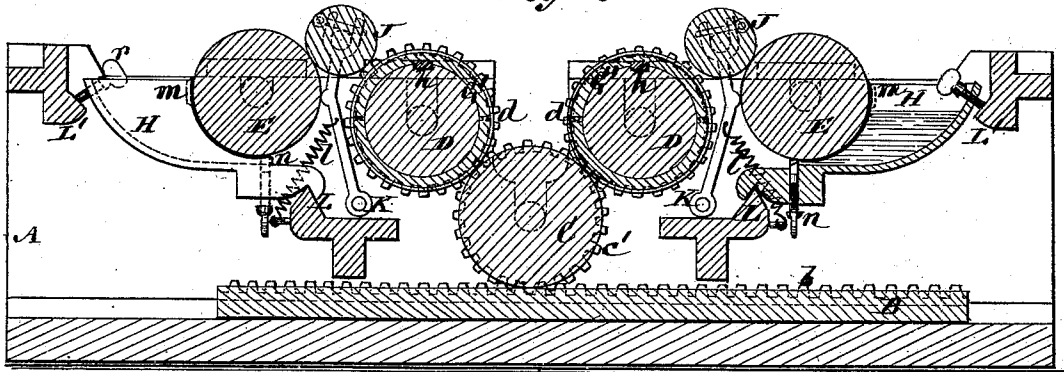


Fig. 4.

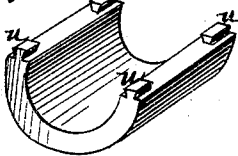


Fig. 5.

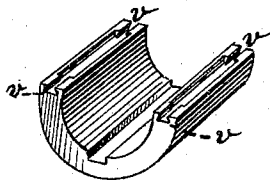
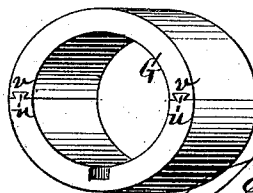


Fig. 3.



Witnesses
John Becker
Fred Thomas

J. T. Bruen
E. C. Bruen
by their Attorney
Brown & Allen

UNITED STATES PATENT OFFICE.

JOHN T. BRUEN AND EDWIN C. BRUEN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PRESSES FOR COLOR-PRINTING.

Specification forming part of Letters Patent No. **178,229**, dated June 6, 1876; application filed September 15, 1875.

To all whom it may concern:

Be it known that we, JOHN T. BRUEN and EDWIN C. BRUEN, both of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Inking Apparatus for Printing-Presses; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention is more especially designed as an attachment to ordinary printing-presses, to adapt them to printing in colors.

The invention consists in a combination of two or more color-rolls, a single transmitting-roll common to all of said color-rolls, and a reciprocating type-bed, printing-stone, or form, when said color-rolls, which, with the transmitting-roll and form, are all positively geared to register correctly, have their figures so arranged that the different parts of the figure received from each by the inking or transmitting roll intervene both in the direction of the circumference of the rolls, as well as in the direction of the length thereof. Said color-rolls are preferably made up or incased by independent and matching pattern-rings.

The invention also consists in a novel construction of said rings in halves or sections dovetailed or equivalently connected together, whereby they may be readily attached to or detached from the rolls which carry them without disturbing adjacent rings on the same rolls, or without taking out the rolls.

The invention likewise consists in certain means for preventing backlash of the rolls, and to secure perfect registering.

Figure 1 represents a plan of an inking apparatus for printing in colors in illustration of my invention. Fig. 2 is a longitudinal vertical section of the same on the irregular line *x x*. Fig. 3 is a view in perspective of a divided pattern-ring, in illustration of one part of the invention; and Figs. 4 and 5, perspective views of the divided or sectional portions of the same detached.

A is the frame of a colored-inking apparatus, which may be attached to any suitable printing-press, B being the reciprocating type-bed, printing-stone, or form. This bed B is moved

backward and forward relatively to the inking-roll C and pattern or impression cylinder of the press by means of racks *b b* on said bed and spur-wheels *c c'* on the ends of the inking-roll C. These spur-wheels *c c'* are in gear with spur-wheels *d d* on opposite ends of the color-rolls D D, and are unequally arranged or stepped—that is, the teeth of said gear on the one side of the apparatus come opposite the spaces between the teeth of such gear on the other side of the apparatus, whereby a continuous action is produced, which reduces or prevents backlash, and so contributes to produce perfect registering as regards the joint action of the color-rolls relatively with each other and with the inking-roll C. These rolls, as also fountain-rolls E E, may receive their motion by gearing from the printing-press.

The color-rolls D D are not designed to have any longitudinal or laterally-reciprocating motion for the purpose of distributing the colors, but are restricted to a circular travel or motion, and consist simply of parallel rolls or shafts having color-carriers or pattern-rings G G', arranged on or along them, so that they present an open space on the one roll or shaft where there is a color-carrier or colored printing-surface on the other roll or shaft in the same transverse plane or planes intersecting said shafts, whereby the several colors are prevented from coming in contact, mixing, or blending. The spacing of the color carriers or rings is accordingly an important feature.

The color-carriers or pattern-rings G G' may be of various designs, either for printing in continuous stripes of different colors, or in fanciful figures at distances apart, or for doing both kinds of work, and may be so constructed that they each represent a blank in a chromo-print; but said color-rolls or the color-carriers or pattern-rings thereon, and which here form the acting portions or surfaces of the rolls, have their figures so arranged that the different parts of the figure received from each by the inking or transmitting roll C intervene both in the direction of the circumference of the rolls, as well as in the direction of the length thereof.

The rings G G' on the rolls D D represent a fanciful design in two different colors, as

transferred by said rings to the inking-roll C, the inked surfaces *f* of either one ring matching with the spaces *g* of the other ring.

These several rings G G' are constructed in longitudinal halves or sections, with projecting end dovetails *u* on the meeting-face of the one half section, capable of entering longitudinal recesses *w* in the other half section when placing the two half sections together, and so that by longitudinally sliding the one half section relatively to the other, the end dovetails *u* will lock with the end dovetail recesses *w* in the other half section, substantially as represented in Figs. 3, 4, and 5 of the drawings, whereby the rings G G' may be readily attached to or detached from the rolls which carry them without disturbing adjacent rings, or without taking out the rolls. To insure perfect registering when independent color or pattern rings, as described, are employed, the rolls D D are each provided with feathers or longitudinal keys *h* on their surfaces, adjustable by screws *i i* in a radial direction, and serving not only to rotate the color-rings in common with their rolls, but also—that is by setting the feathers *h* radially outward—to bind or hold the rings firm to their places, and so that they cannot shift to spoil the register.

Separate color-cups or ink-fountains H are used for each color or pattern ring, although only two are here shown, and the fountain-rolls E, which are driven by the press, receive sufficient motion to transfer the different inks or colors round the distributing-rolls J. These rolls J are rotated by contact or friction with the fountain-rolls E, and are supported in a free or swinging manner by pivoted frames or levers K, controlled by springs *l*, so that said rolls J remain in contact with the fountain-rolls E till fully supplied with their respective inks or colors, when cams *m*, on the fountain-rolls, coming in contact with the levers K, throw or vibrate the distributing-rolls J up against the color or pattern rings G G' for a sufficient period of time to insure the full or proper inking of said color or pattern rings, after which the distributing-rolls J are thrown back by the springs *l*, and the color or pattern rings G G' transfer the different colored patterns or designs to the inking-roll C, which applies the ink to the form. This combination avoids the necessity of duplicate inking and distributing series of rolls, the intermittently swinging distributing-rolls arranged to operate between the fountain and color rolls avoiding such necessity. Our improvements also permits of printing in varying widths as distinguished from uniform widths.

The color cups or fountains H—that is, one for each color carrier or ring—are connected with or carried by the frame A, so that they may be adjusted transversely over the latter, to allow of their adaptation to the color or pat-

tern rings. Thus the color cups or fountains H are not only constructed so that the fountain-rolls E will consume or use up all the color or ink in the fountains, subject to the control of doctors *n*, which regulate the supply, but said fountains are made capable of being slid or adjusted transversely or across the frame on or along parallel guides or ways L L' to vary the position of the color cups or fountains relatively to the color or pattern rings. Such transverse guides or supports may be variously constructed and disposed, the one supporting the cups at their front and the other in their rear, and the front support or guide L preferably being a simple V-shaped bar, which the cups are grooved to fit, and the other or back guide L being a bar on which the cups rest by a set-screw, *r*, to hold the cups in position when adjusted in proper relation to the length of the roll, as well as to properly adjust them to the periphery of the roll.

The apparatus may be provided with any desired number of color-rolls in pairs for operation in connection with inking-rolls, as described, and, of course, the fountains and distributing rolls be accordingly proportioned, both as regards number and arrangement.

We claim—

1. The combination of the flat reciprocating type-bed, printing stone, or form B, the two or more color-rolls D D, and the single inking or transmitting roll C, which is common to all of said color-rolls and to the reciprocating form B, when said color-rolls, which, with the transmitting-roll and flat reciprocating form, are all positively geared to register perfectly, have their figures so arranged that the different parts of the figure received from each by the transmitting-roll intervene both in the direction of the circumference of the rolls as well as in the direction of the length thereof, substantially as herein described.

2. The color carriers or pattern rings G G', constructed in longitudinal sections, fitted together substantially as described, in combination with the rolls D D which carry them, whereby said rings may be separately attached or detached without disturbing adjacent rings or removing the rolls, essentially as described.

3. The combination of the radially-adjustable keys or feathers *h*, with the rolls D, and independent color carriers or pattern rings carried by said rolls, substantially as specified.

In testimony whereof we have hereunto signed our names in the presence of two subscribing witnesses.

JNO. T. BRUEN.
E. C. BRUEN.

Witnesses:

BENJAMIN W. HOFFMAN,
VERNON H. HARRIS.