

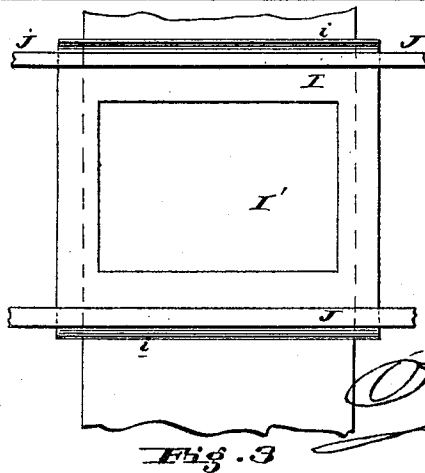
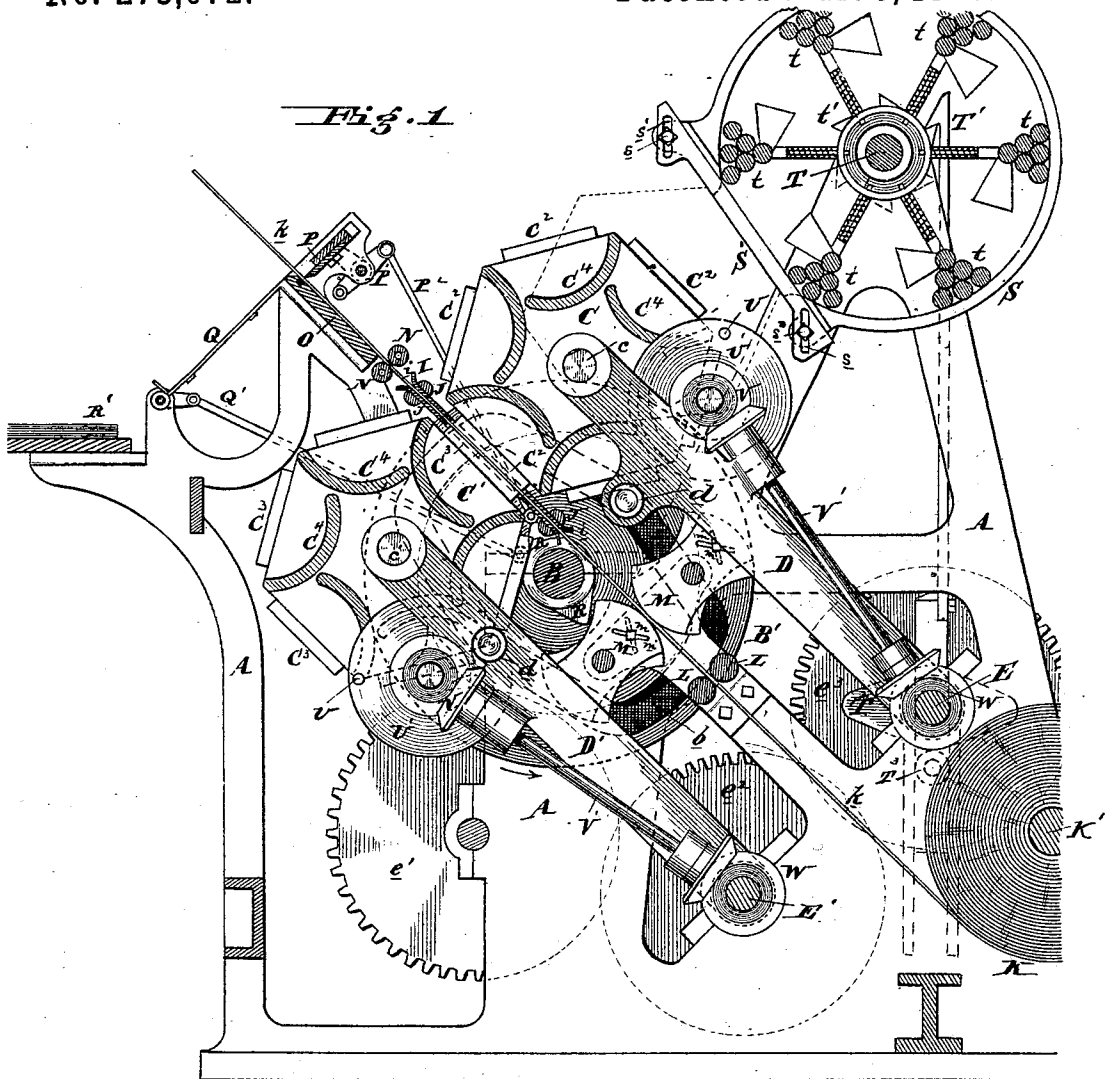
(No Model.)

2 Sheets—Sheet 1.

H. P. FEISTER.  
MULTICOLOR PRINTING MACHINE.

No. 273,672.

Patented Mar. 6, 1883.



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 L. J. Matos

*Inventor*

Henry P. Feister

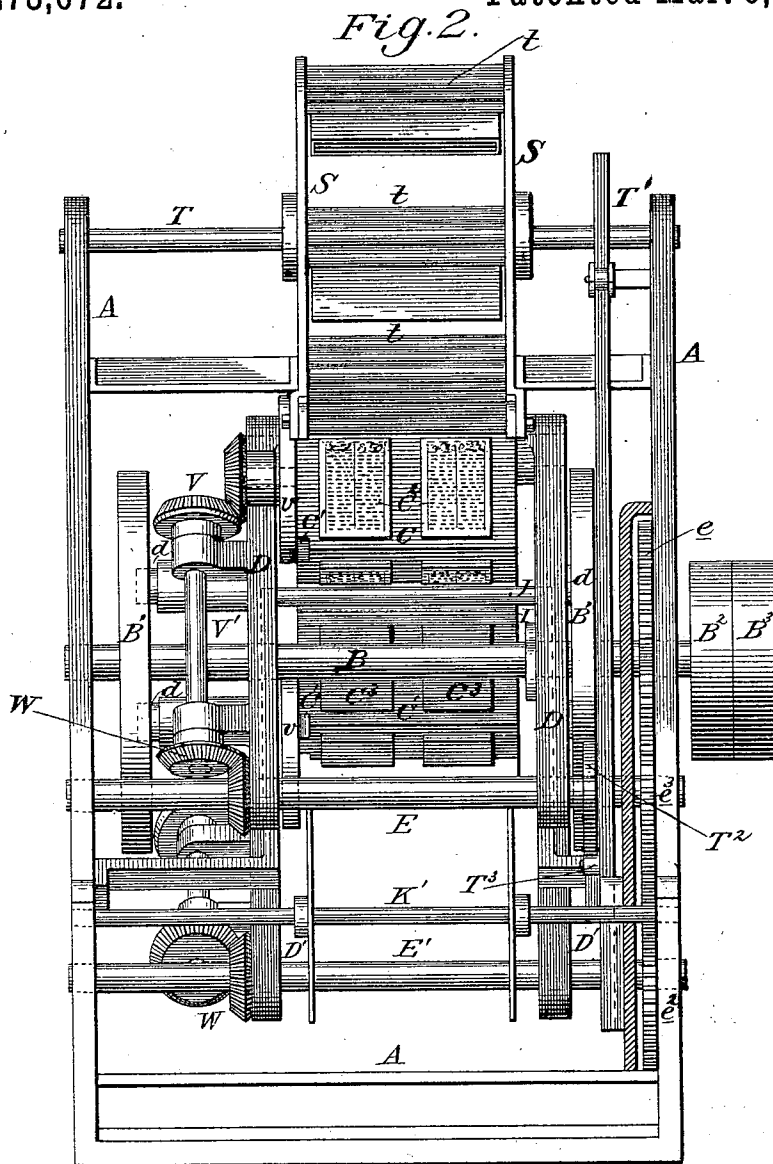
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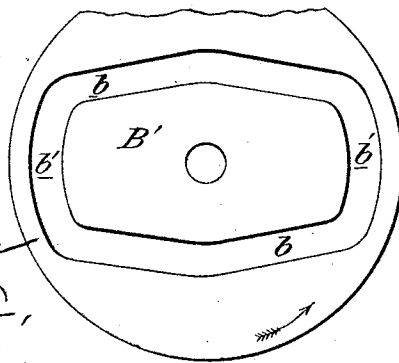
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*Fig. 4.*



Witnesses:  
Francis Robinson  
J. M. Rice,

Inventor:  
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# UNITED STATES PATENT OFFICE.

HENRY P. FEISTER, OF PHILADELPHIA, PENNSYLVANIA.

## MULTICOLOR-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 273,672, dated March 6, 1883.

Application filed May 16, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY P. FEISTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Multicolor-Printing Machines, of which the following is a specification.

My invention has reference to printing-presses; and it consists in a double frisket, through which the continuous web of paper is passed; further, in two rotating and oscillating heads, one of which carries the type and the other the make-ready; further, in combining with the oscillating type-head an inking-wheel adapted to ink type on the head with a different color at each oscillation, and in many details of construction, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

The object of this invention is to do what is technically known as "color-printing" by causing the paper to be held stationary while the different colors are printed thereon by the type-forms, which are automatically changed to insure a perfect register, and prevent all accidental lapping of the colors, as is sometimes the case when the paper is handled two or more times before the print is completed.

This invention is particularly adapted to print book-backs for almanacs and pamphlets generally, and would be used in connection with the book printing and binding machine granted to me by Patent No. 256,662, dated April 18, 1882.

In the drawings, Figure 1 is a sectional elevation of a color-printing press embodying my invention. Fig. 2 is an elevation of same. Fig. 3 is an elevation of the frisket, and Fig. 4 is a side view of main cam-wheels.

A is the frame of the machine.

B is the main shaft, and carries the two cam-wheels B', provided with cam-grooves *b b'*, and also the fast and loose pulleys B<sup>2</sup> B<sup>3</sup> and spur-wheel *e*.

C C' are the two oscillating heads, one of which, C, carries the type C<sup>2</sup>, and the other, or C', the make-ready pads C<sup>3</sup>. These heads are made polygonal, as shown, and may have as many faces as desired, each of said faces corresponding to a color. Each of the color-blocks C<sup>2</sup> has its own make-ready C<sup>3</sup>, so that

in printing not only is perfect registration attained, but also the proper and best impression is obtained. These heads C C' are respectively pivoted or journaled to arms D D' at *c c'*, and these arms are loosely hinged to their respective shafts E E'. Each of said arms is provided with a friction-roller, *d*, which works in the cam-grooves *b b'* of wheels B', which cam-grooves are adapted to draw the two heads C C' together, hold them in contact for an instant of time, then separate them and hold them away from each other a short interval of time, then force them together again, and so on continuously, said heads making two oscillations for every revolution of the cam-wheels B'. While these heads are being oscillated apart they are intermittently rotated, so as to bring a fresh color-block C<sup>2</sup> and make-ready C<sup>3</sup> in printing position by means of the pins U on the revolving disks U', working in slots or grooves C<sup>4</sup> in said heads. These disks U' should revolve twice as fast as the cam-wheels B'. They are rotated by miter-gears V, shafts V', miter-gears W, shafts E E', and spur-wheels *e e' e<sup>2</sup> e<sup>3</sup>*; but I do not limit myself to this mechanism, as there are many ways of accomplishing the same result. The disks U' are carried by arms D D', and do not change their relative position with respect to their own heads C C'. Arranged between said heads is my improved frisket, which consists of two plates, I, provided with one or more perforations, I', through which the type prints, supported very close to each other by frames J, and between which the paper to be printed is fed, as shown in Figs. 1 and 3. If desired, the ends of the parts I may be curved outward, as at *i*, to prevent any possibility of the paper catching. The color-blocks C<sup>2</sup> enter the apertures in one plate I, and the make-ready blocks C<sup>3</sup> enter the apertures in the other plate I, as shown.

The roll of paper K is supported upon an axle, K', and the web *k* fed between tension-rollers L, then is intermittently fed to the frisket by the adjustable feed-disks M, set two and two, having their sides notched, and being adjusted by slots *m'* and bolts *m*, by which any desired length of sheet may be fed. This feed is fully described and claimed in the aforementioned patent granted to me. Hence in this application I do not claim it, except in combination.

These disks are adapted to make a half-revolution after the heads C C' have made one revolution upon their axes *c c'*. After the paper passes through the frisket it is fed between rollers N to the knife P, which is actuated by a crank, P', rod P<sup>2</sup>, and cam R on shaft B. After the paper is cut it falls onto the fly-frame Q, which is actuated by the rod Q' and cam R to lay said printed paper upon the table R'. Any other suitable mechanism may be used to operate the knife and fly-frame. When the head C is moved away from the frisket by the part *b* of the cam-wheel B' the pin U enters a curved groove, C<sup>4</sup>, in said head and quickly turns it to the proper position to bring the next color-block into position for printing. After turning said head the pin moves on in said groove, which is concentric with the axis of wheel or disk U'. Hence the pin then acts to steady the head. The moment the head is turned a sixth or an eighth of a revolution the next color-block C<sup>2</sup> reaches the inking-wheel, as shown in dotted lines, Fig. 1. The inking-wheel is fast to a shaft, T, with which it revolves, and is provided with as many sets of color-rolls *t* as there are color-blocks C<sup>2</sup>, and these inking-rolls *t* are guided by rails S S', the latter of which are straight, as shown, so as to guide the inking-rolls in a straight line to ink the color-block. These straight guides S' may be adjusted by slots *s* and bolts *s'*, or by any other means. If the head C has six color-blocks C<sup>2</sup>, then with every oscillation of the head the inking-wheel rotates one-sixth of a revolution, so as to run one set of color-rolls *t* across the face of the color-block corresponding to said color, and when it is at rest and under action of the concentric part *b'* of the cam-wheel B', this inking-wheel may be intermittently actuated by ratchet-wheel T', pawl T', cam T<sup>2</sup>, and roller T<sup>3</sup>, or other suitable mechanism.

The operation is as follows: As the shaft B is rotated the cam-wheels B' force the heads C C' apart, and during such movement the pins U cause a partial rotation of the said heads, bringing a fresh set of color-blocks and make-readies into printing position. At the end of the outward throw of the heads the head C, containing the type or color-blocks C<sup>2</sup>, rests against the inking-wheel frame. At this instant one set of inking-rolls *t* is caused to pass from one side of the guide S to the other, being guided upon the flat guides S' over the face of the type. The inking-wheel then ceases to rotate, and is in position to ink the next color-block or type with another colored ink. By this means each color-block has its own particular inking-rolls, so as not to mix colors; but, if desired, where there are a duplicate set of color-blocks there may only be one-half the number of inking-rolls. As the cam-wheels B' still rotate the heads are drawn together and print upon the paper *k*, held in the double frisket I. This operation is repeat-

ed until all of the color-blocks have printed. Then the feed wheels or disks M feed the paper along through the frisket, and as the next printing action goes on the knife P cuts the printed part off, and it falls upon the fly-frame Q and is laid upon the table R'.

By the use of the double frisket and oscillating printing-head, adapted to intermittent rotation, I am enabled to print two or more colors without moving the paper, thereby insuring the most perfect register. The adjustable guide S' regulates the pressure of the inking-rollers upon the color-blocks. I do not limit myself to the construction shown, as it may be modified in many ways.

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

1. In a printing-press, two oscillating heads, one of which is provided with a series of forms of type and the other with corresponding make-readies, in combination with automatic mechanism, substantially as described, to oscillate said heads to and from each other, and mechanism, substantially as described, to automatically and successively bring said type-forms and their corresponding make-readies into printing register.

2. In a printing-press, two oscillating heads, one of which is provided with type-forms and the other with corresponding make-readies, in combination with mechanism, substantially as described, to oscillate both of said heads to and from each other, and a stationary double frisket arranged between said heads, and through which the paper to be printed is fed.

3. In a printing-press, two oscillating heads, one of which is provided with a series of type-forms and the other with corresponding make-readies, in combination with automatic mechanism, substantially as described, to oscillate said heads to and from each other, mechanism, substantially as described, to successively bring said type-forms and their corresponding make-readies into printing register, a stationary double frisket arranged between said heads, and through which the paper to be printed is fed, and inking mechanism, substantially as described, to ink said type-forms.

4. In a printing-press, the combination of heads C C', journaled in oscillating arms D D', and respectively carrying type-forms C<sup>2</sup> and make-readies C<sup>3</sup>, means, substantially as described, to oscillate said heads to and from each other, shaft T, carrying the series of color inking-rolls *t*, means, substantially as described, to intermittently rotate said shaft and heads, guides S, and adjustable guides S'.

In testimony of which invention I hereunto set my hand.

HENRY P. FEISTER.

Witnesses:

R. A. CAVIN,

S. H. ALLEMAN.