

(No Model.)

J. W. OSBORNE.
COLOR PRINTING PRESS.

2 Sheets—Sheet 1.

No. 293,668.

Patented Feb. 19, 1884.

Fig-1-

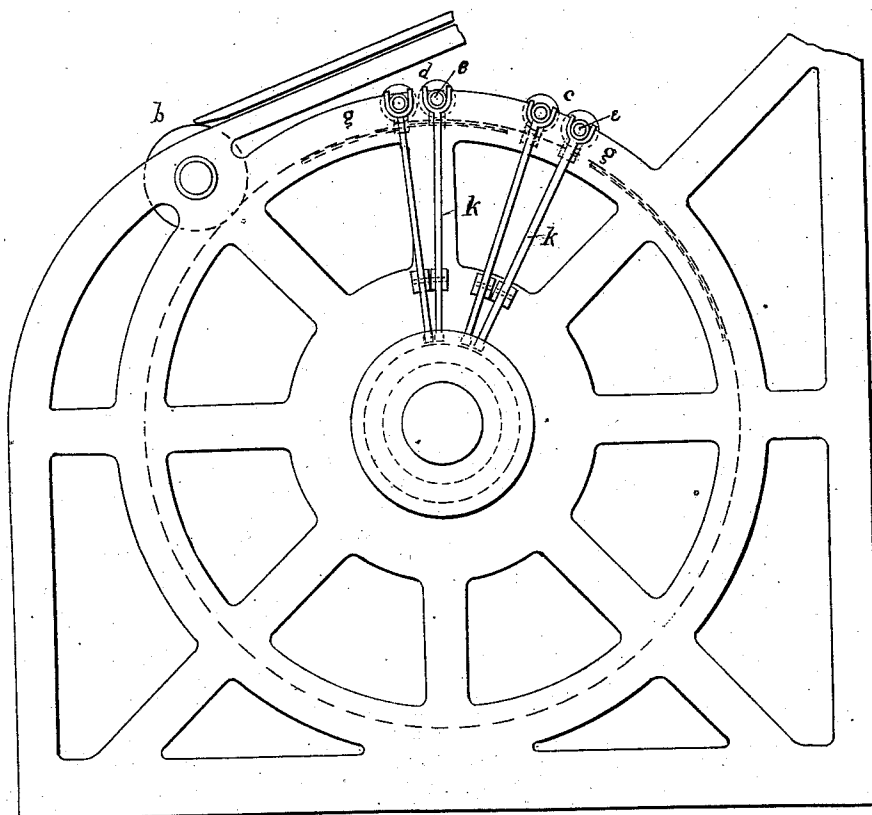
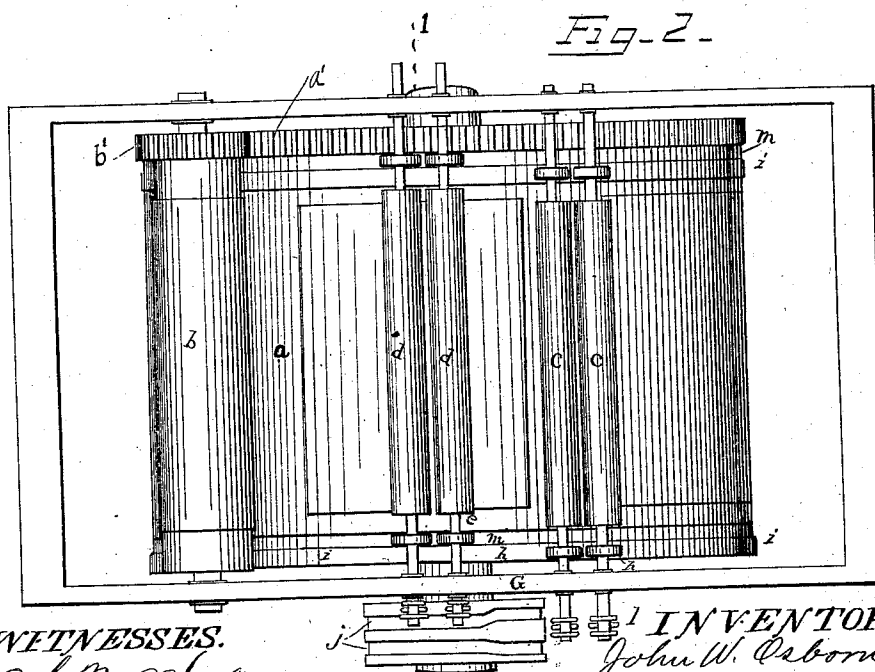


Fig-2-



WITNESSES.

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L. W. Brown.

INVENTOR.
John W. Osborne
per Warwick & Barett
His attys.

(No Model.)

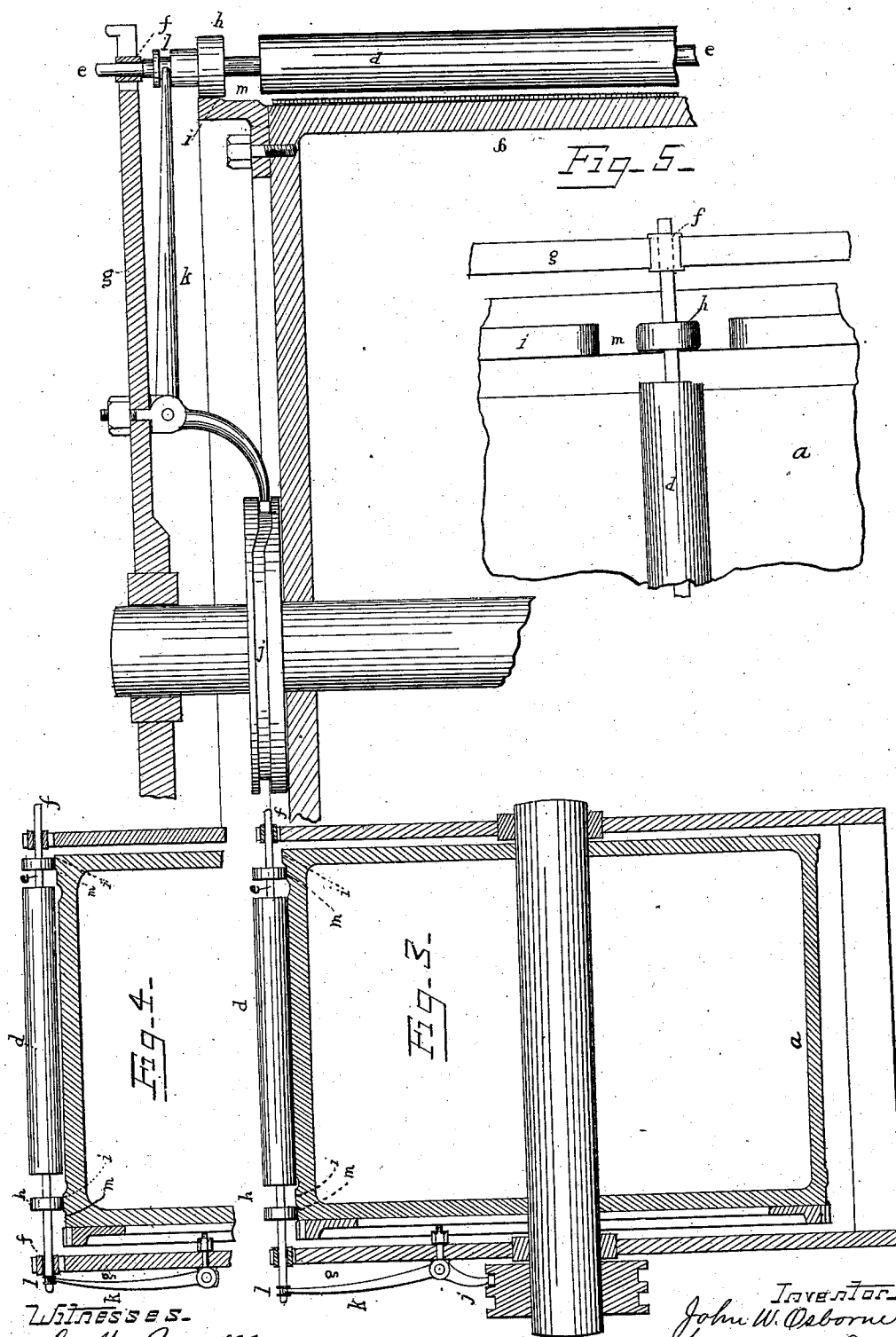
2 Sheets—Sheet 2.

J. W. OSBORNE.
COLOR PRINTING PRESS.

No. 293,668.

Fig-6-

Patented Feb. 19, 1884.



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UNITED STATES PATENT OFFICE.

JOHN W. OSBORNE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
TO WILLIAM H. FORBES, OF BOSTON, MASSACHUSETTS.

COLOR-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 293,668, dated February 19, 1884.

Application filed June 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. OSBORNE, a subject of the Empress of India, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Color-Printing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of printing-machines in which two or more colors are printed in sequence on the same sheet of paper, and on the same side of said sheet, for the production of a complete design.

The object of my invention is to furnish an apparatus by which the inking of the several forms may be accomplished, each form being inked with its appropriate color.

The invention is particularly applicable to rotary chromatic presses, in which the forms for all the colors are attached to the convex side of a large cylinder, which, in revolving, presents each form in turn to the sheet that is to be printed, which sheet is held upon the surface of an impression-cylinder, and rotates once with the passage of each form. The inking of the forms in such a press is done by independent groups of form-rollers, there being one group of rolls for every form employed, each group usually supplying a separate color to its particular form and to no other form. In order that the ink or color may be thus furnished to the forms in proper sequence, each set of rolls is permitted to come in contact with the proper form which should receive ink therefrom, and is held away from the form-cylinder during the passage of all the other forms. My improvement on presses of this class will be hereinafter pointed out and claimed.

Referring to the drawings, Figure 1 represents a side elevation of a press, details being omitted, and but two groups of rolls and two forms being shown in position. Fig. 2 is a plan of the same. Fig. 3 is a cross-section on line 1 1 of Fig. 2, with the roller on the form. Fig. 4 is a partial section of the upper portion of Fig. 3, showing the roller lifted from the form. Fig. 5 shows in plan, on an enlarged scale, a modified construction of one of the bearers. Fig. 6 is a cross-section of part of the

press, showing an arrangement for lifting the rolls by longitudinal movement of the truck.

In the drawings, *a* denotes a form-cylinder, in this case having a capacity of six forms, only two forms being shown, as would be the case were the press to be used for printing in two colors only. The impression-cylinder, which carries the sheet, is geared to the form-cylinder in the usual manner. *b* represents the impression-cylinder, and *a' b'* the gearing by which the two cylinders are kept in unison.

The form-rollers (shown in the drawings in groups of two rollers) are indicated by the letters *c* and *d*. The spindles *e e* of these rolls extend into bearings *f* in the frame *g*, which bearings are capable of a slight movement radial to the form-cylinder, so that the rolls may run in contact with the forms and apply ink thereto, or be lifted slightly away from the forms at the proper time. As represented in the drawings, the two groups of form-rollers *c d* are so placed that they would lie upon the forms of their own weight. Springs to hold the rolls down have accordingly been omitted, as have the ink-fountains, distributing-rolls, and other attachments common to printing-presses of this class. It must be understood that all these devices may be used with my press, although they form no part of my present invention.

Prior to my invention a chromatic printing-press had been used in which there was a bearer or cam at each side of the press for each set of form-rollers, on which the trucks of said rolls ran, and were raised and lowered at the proper time owing to the form of the cams or bearers. In a press of this character, in which six forms are to be printed, it would require six cams on each side of the cylinder, each pair having depressions opposite its proper form. This construction involves great length and expense in the construction of the form-cylinder and inconvenience in the manipulation thereof. In my invention but two pairs of bearers are required, no matter how great the number of forms on the form-cylinder.

On the roller-spindles the trucks *h* are arranged in the position shown in the draw-

ings. In all the figures, except Fig. 6, where these trucks are shown, they are intended to be secured to the spindles *e*. The trucks *h* are of the same diameter as the form-rollers.

5 *i i* represent bearers on the form-cylinder. These bearers increase the diameter of the form-cylinder by as much as it is desired to raise the rollers above such forms as are not to be inked. The roller-spindles rotate freely
10 in the bearings *f*, and are continuously driven by the trucks *h*, which are in frictional contact with the bearers *i* or with the surface of the cylinder. The trucks *h* are capable of movement in the direction of the length of
15 the rolls and parallel with the axis of the form-cylinder. This movement may be imparted to them in various ways. The cams *j*, on the axis of cylinder *a*, acting on the inner ends of levers *k*, serve to vibrate said
20 levers. These levers terminate in forks, which grasp the roller-spindles at *l*, and serve to force said spindles, and with them the rollers and trucks, in the direction of their length. This
25 longitudinal movement of the rolls should be about equal to the width of the bearers *i*, and the movement to thrust the trucks off from the bearers, so that the rolls may come down to the surface of the form, takes place just before the leading edge of the form reaches the
30 rolls which are to give that form a supply of ink. The effect of the endwise thrust of the roller-spindles is to cause the trucks *h* to leave the bearers *i* and travel upon the surface *m*, which is of the same diameter as the form.
35 While the trucks run on this surface the rollers will be in contact with the form, and will supply the form with ink, ready for printing when that form shall reach the impression-cylinder. After the form has passed, the roller-
40 spindles are drawn back by the operation of the cams and levers, so that the trucks run upon the bearers *i*, and all the other forms may pass under without coming in contact with the rolls. Each successive group of rolls
45 is operated in the same way, so that all the groups of rolls are held out of contact with all the forms except the particular form which is to be supplied with ink.

The bearing-surface *m* may extend quite
50 around the form-cylinder, in which case the trucks simply descend a decline as they are thrust from the bearer *i* upon the surface *m*; or the surface *m* may be flush with the bearer *i* for distances corresponding to the spaces between
55 the forms, which are at least as great as the gap in the impression-cylinder. In the latter case, as seen in Fig. 5, the bearing-surface *m* becomes a cam having depressions corresponding to the length of the forms, and the trucks,
60 when the rolls are thrust in the direction of their length, slide on flush surfaces and then roll down inclines, to bring the rolls in contact with the forms and up similar inclines after inking their form.

65 In the modification shown in Fig. 6 the rolls are not thrust in the direction of their length; but the trucks *h* are splined to the spindles of

the rolls, and are thrust in the direction of the length of said spindles by the operation of
70 cams *j* and levers *k* engaging with the trucks. The rolls thus partake of the motion of the trucks in a direction radial to the form-cylinder, but not in a longitudinal movement.

It is not absolutely necessary that the trucks
75 on both ends of the roll shall be shifted to raise or lower the roll. If one end only is raised, the other end may rock in its bearings, thus placing the roll in an inclined position relatively to the forms, one end being but slightly above the form, while the other is 80 higher.

What I claim is—

1. The combination, with the form-carrying bed of a printing-press, of inking-rolls and mechanism, substantially as described,
85 whereby the rolls may be shifted endwise, and at the same time caused to approach or recede from the forms, all co-operating substantially as stated.

2. The cylinder provided with high and low
90 bearers, the inking-rolls and their trucks, and means, substantially as described, for shifting the trucks lengthwise of the cylinder from the high to the low bearers, all the parts being in combination, substantially as described. 95

3. The cylinder provided with a high and a low bearer at each end, the low bearer having the specified relation to the form, the inking-rollers having trucks arranged, as specified, to ride on said bearers, the lever for shifting
100 the trucks, and an operating-cam, all in combination, as set forth.

4. The cylinder having two high bearers extending around it, and having low bearers alternating with high bearers arranged beside
105 said first-mentioned high bearers, said low bearers extending the length of the respective forms, in combination with inking-rolls having trucks on the shafts thereof, said trucks being capable of shifting lengthwise to ride on
110 high or low bearers when operated by suitable mechanism, substantially as described.

5. The combination, with the stock or spindle of an inking-roll, of a truck splined to said stock, high and low bearers on the cylinder
115 of the press, and mechanism, substantially as described, for shifting the truck lengthwise of the roller-spindle, so that it may ride on either the high or low bearer, substantially as described. 120

6. The combination, with the cylinder of a press having high and low bearers at each end, of inking-rolls having driving-trucks upon their spindles, a lever pivoted to the frame and engaging with the trucks, and a cam adapted,
125 substantially as described, to shift said lever and trucks, all in the manner and for the purpose substantially as stated.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. OSBORNE.

Witnesses:

GEO. F. GRAHAM,
HARRY B. WILSON.