

W. J. WICKERS.
 MULTICOLOR PRINTING PRESS.
 APPLICATION FILED JUNE 4, 1909.

985,873.

Patented Mar. 7, 1911.

3 SHEETS—SHEET 1.

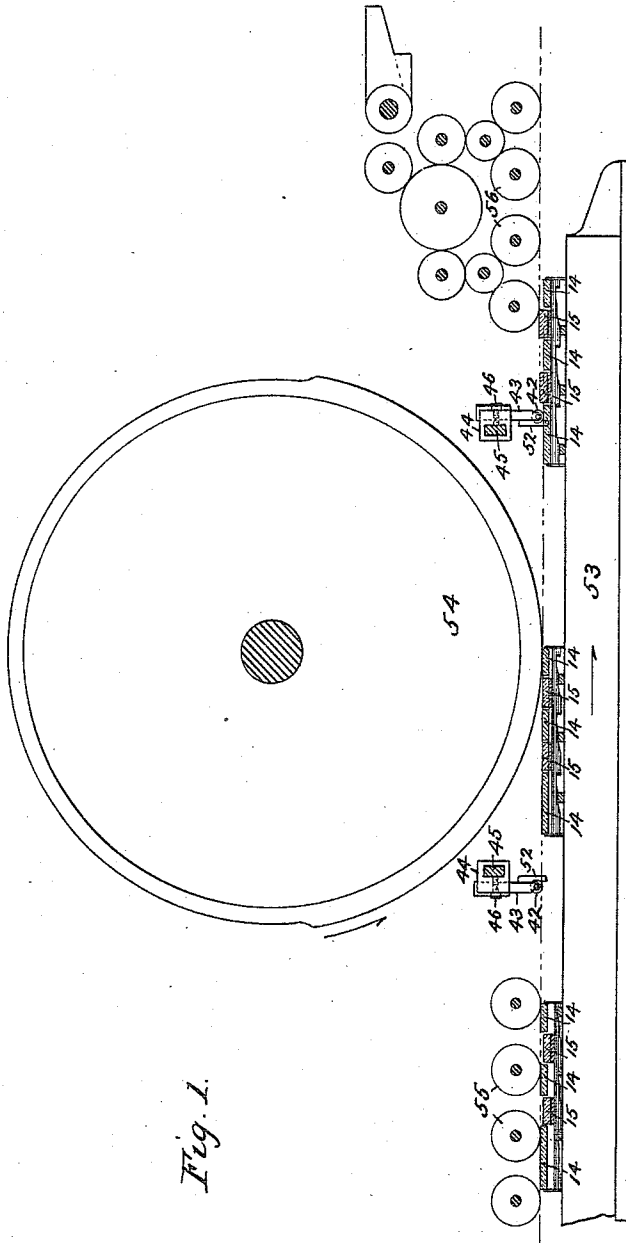


Fig. 1.

Witnesses:
 A. Martell,
 C. W. Lovell.

Inventor
 W. J. Wickers
 By his Attorney
 Wm. Dodge

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3 SHEETS—SHEET 2.

Fig. 2.

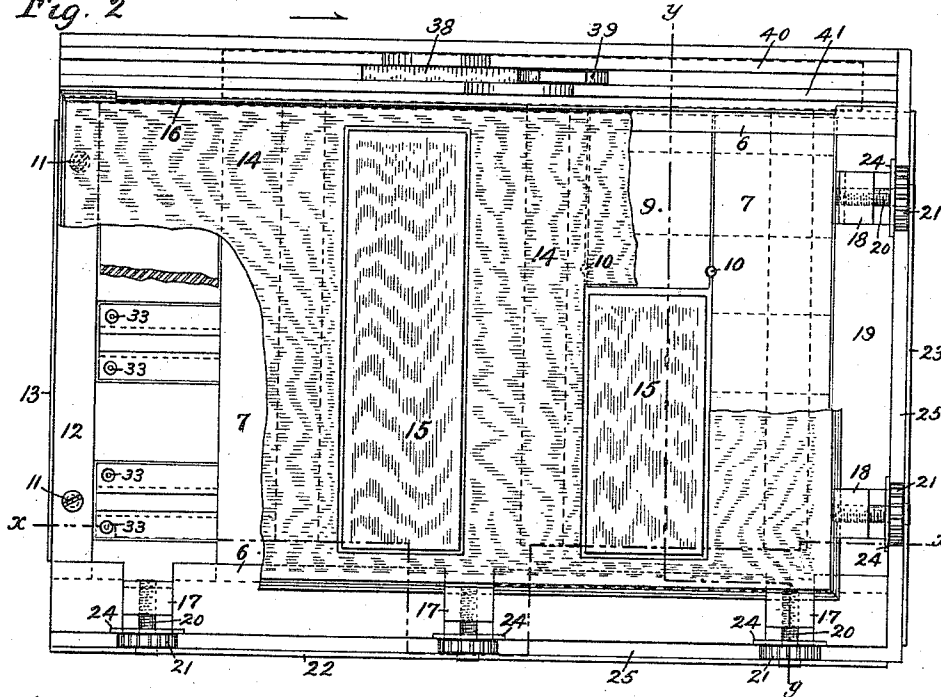


Fig. 3.

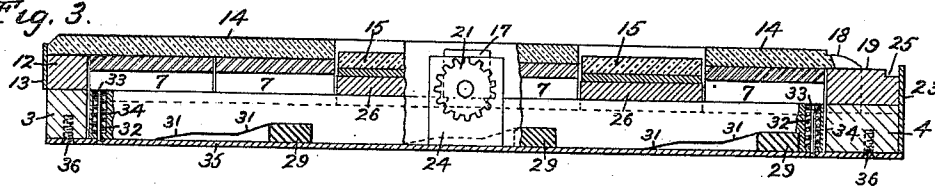


Fig. 4.

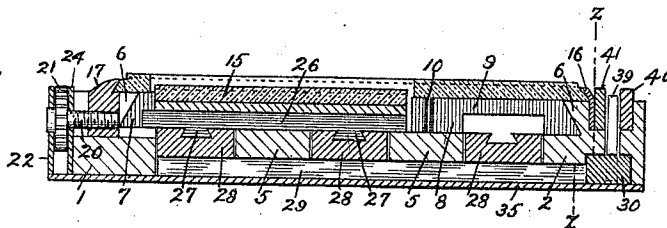
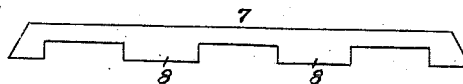


Fig. 5.



Witnesses:
 H. Martell.
 C. W. Lovell.

Inventor
 W. J. Wickers
 By his Attorney W. Dodge

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3 SHEETS—SHEET 3.

Fig. 7.

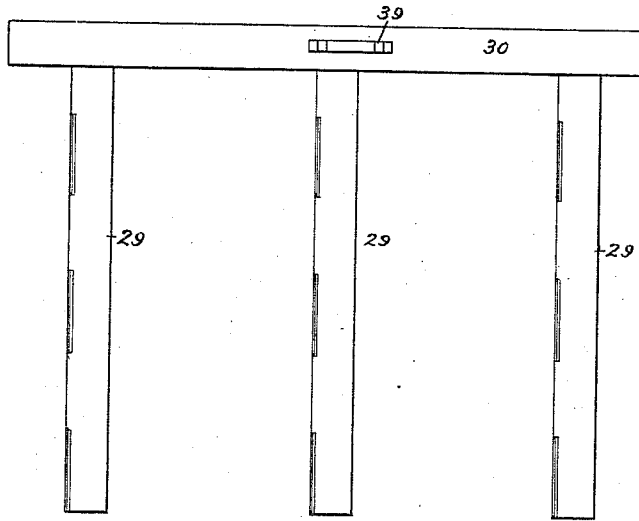


Fig. 6.

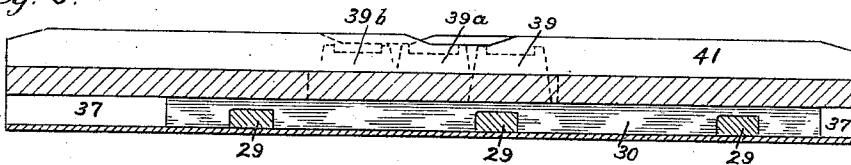


Fig. 9.

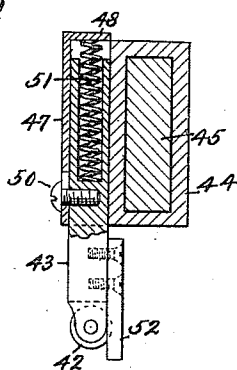
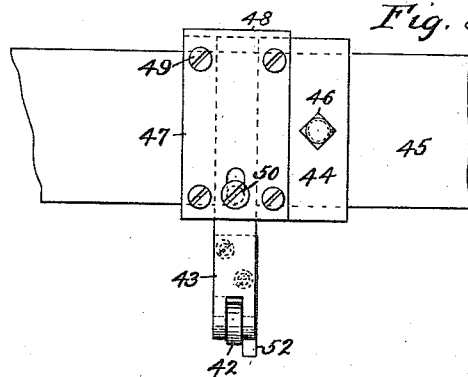


Fig. 8.



Witnesses:
J. Martell
C. W. F. [Signature]

Inventor
W. J. Wickers
By his Attorney [Signature]

UNITED STATES PATENT OFFICE.

WALTER J. WICKERS, OF BROOKLYN, NEW YORK.

MULTICOLOR-PRINTING PRESS.

985,873.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed June 4, 1909. Serial No. 500,139.

To all whom it may concern:

Be it known that I, WALTER J. WICKERS, citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Multicolor-Printing Presses, of which the following is a specification.

The invention relates to improvements in multicolor attachments for printing-presses, and as herein disclosed comprehends a simple means for printing in two colors in conjunction with a single type-bed and impression-cylinder, as employed in conventional types of printing-presses.

The invention further includes a printing-plate block of particular construction adapted to carry primary and secondary plates and provided with means for relatively moving the latter plates above and below the printing plane to permit of inking the plates severally in different colors for presenting a multicolored printing form at each impression of the press.

Further objects of the invention consist in certain details of construction hereinafter set forth.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like characters of reference are used to designate like parts throughout the several views, and in which:

Figure 1 is a side elevation, partially in section, of a portion of a printing-press embodying my invention; Fig. 2, a ground plan of a printing-plate block, showing a certain arrangement of the superposed plates; Fig. 3, a longitudinal section of the block on broken line $x-x$, Fig. 2; Fig. 4 is a transverse section of the same on broken line $y-y$, Fig. 2; Fig. 5 is a detail view of a sectional plate-carrier; Fig. 6 is a longitudinal section of the block on broken line $z-z$, Fig. 4; Fig. 7 is a detail view of an actuating drive-bar adapted for use within the block; Fig. 8 is a fragmental side view of one of the cross-bars carrying an adjustable head and operating-dog; and Fig. 9 is a transverse sectional view of Fig. 8.

Referring to Figs. 2, 3, 4 and 6, the body of the block is integrally formed of framework comprising the longitudinal side bars 1 and 2, transverse end bars 3 and 4 and the longitudinal intermediate bars 5, the upper faces of side bars 1 and 2 being provided

with inwardly-beveled projections 6 to receive and slidably engage the beveled ends of the sectional plate-carriers 7, shown in detail in Fig. 5. The plate-carriers are formed for further support with base members 8 which rest upon the intermediate bars 5. A fractional plate-carrier 9 is interposed between a pair of full-length carriers 7 and held against displacement by pins 10 engaging lateral grooves in the adjacent carriers.

Upon the end bar 3, and detachably secured thereto with screws 11, is a top plate 12, having ends engaging the inwardly-beveled projections 6, and further provided on its outer side with a fixedly-secured stop-guide 13. The upper surface of top plate 12 is in flush relation with the upper surfaces of projections 6 and carrier-plates 7 and 9 to present a level and substantially continuous bearing surface for the relatively-fixed primary printing-plate 14, fragmentally shown, and provided with apertures or spaces for receiving the secondary printing-plates 15, vertically movable in relation therewith. The printing-plate 14, being beveled along its marginal edges in a manner common with plates of this character, is held along one edge by the angle-bar 16, which acts as an abutment for the clamp-clips 17, the corresponding clips 18 acting in conjunction with stop-guide 13 to clamp the opposite edges of the plate. The several clamp-clips are provided at the top with beveled grooves which engage the plate and are laterally guided to slide in slots formed in the projection 6 of side bar 1 and in the fixed top plate 19, secured upon the end bar 4. Each of the clips is further provided with a screw-threaded perforation engaged by a clamp-screw 20, having a ratchet-wheel 21 fixed upon the outer end thereof, the several clamp-screws being journaled exteriorly of the wheels in the guide-plates 22 and 23 and on the opposite side of the wheels in the thrust-washers 24, the latter being secured in recesses formed in the block, and in which recesses are also contained the body of the ratchet-wheels, the upper portion of which projects therefrom for the engagement of a ratchet of well-known form, the latter being guided in grooves 25, and operating in the usual manner to rotate the clamp-screws in opposite directions for detachably securing the primary plate 14.

For the support of the secondary or rela-

tively-movable printing-plates 15 are plate-holders 26, of variable sizes corresponding to the required dimensions of the secondary plates. These holders are substantially of the same width as the primary-plate carriers and are arranged for association therewith in various combinations, which may be readily made upon the removal of top plate 12. The primary printing-plates are preferably formed in one piece, with apertures or slots provided therein to closely embrace the secondary plates and serve as a guide therefor for preserving perfect register.

Upon the bottom of the secondary-plate holders are formed dovetailed tongues 27, having slidable connection with corresponding grooves in the cam-bars 28, the latter being laterally and longitudinally guided by the inner faces of the frame of the block and supported for vertical movement upon the arms 29 of the drive-bar 30. On the bottom face of each cam-bar are formed three series of similar cam-sections engaged respectively by the three flat-faced arms 29, which faces engage three corresponding steps or dwells in each series thereof to firmly support the several cam-bars and the superposed plate-holders at three separate levels and in a manner to secure at such points a firm and solid base therefor. Inclined cam-faces 31 connect the steps of these bars and by the engagement therewith of the horizontally-movable arms 29 in opposite directions the cam-bars are raised and lowered, the downward movement thereof being assisted by the retractile springs 32 disposed in terminal recesses therein. The bottom wall of each recess forms a shoulder which serves as an abutment for the lower end of the springs, the opposite end thereof being engaged by the heads 33, formed on the upper end of the spring-rods 34, which pass loosely through the coils of the springs and slidably engage perforations formed in the bottom wall of the recesses, the lower end of the spring-rods being fixedly secured in the base-plate 35, detachably secured to the body of the block by screws 36. The base-plate 35 serves to retain the movable parts within the block in proper adjustment and upon its detachment the parts may be readily adjusted or removed.

The drive-bar 30 is slidably mounted in a groove 37, in the upper wall of which is provided a slot 38, to slidably receive the upwardly-projecting recessed drive-lug 39, rigidly secured to the top of the drive-bar. On opposite sides of drive-lug 39 are arranged the cam-rails 40 and 41, secured in grooves formed in the upper surface of the block's side bar 2. The rails extend substantially the full length of the block, have terminal inclinations and are provided with recessed cam-sections which engage and vertically actuate rollers 42, rotatably mounted in the

bifurcated bearings formed on the lower end of a pair of dogs 43, disposed on opposite sides of the impression-cylinder. (See Figs. 1, 8 and 9.) The dogs are slidably mounted for vertical movement between side walls formed on the heads 44, which in turn are slidably mounted on the fixed cross-bars 45 and adjustably secured thereon by the setscrews 46. The dogs are retained in position on the heads by the face-plates 47, which are provided with inwardly-turned upper flanges 48 and secured to the side walls of the heads by the screws 49. A slot is formed in the face-plates to slidably receive the stop-screws 50, which are fixed in the dogs and serve to limit their vertical movement, the downward movement thereof being effected by the retractile springs 51, disposed in a recess formed therein and abutting at their lower end against the bottom wall of said recess and at their upper end against the inwardly-turned flanges 48. A downwardly-extending tongue 52 is fixed upon each dog in lateral relation with its roller for engaging the recessed lug 39 for actuating the drive-bar 30.

Referring to Fig. 1, numerals 53 and 54 designate respectively the reciprocating type-bed and the rotating impression-cylinder of a conventional printing-press, and 55, a group of the usual form-rollers for inking the plates. On the opposite side of the impression-cylinder is a second set of form-rollers 56, adapted to be supplied with ink of other color. The several inking devices are constructed in any well-known manner and are arranged to separately apply their ink respectively to the primary and secondary plates of a plurality of blocks secured in the usual manner upon the type-bed 53.

As herein shown, the primary plates 14 are inked by the form-rollers 55, and the secondary plates 15 by rollers 56, and the position of the plates in relation to each other and to the inking devices and impression-cylinder is shown in connection with the printing movement of the bed, as indicated in direction by the arrow, which direction of movement is likewise indicated in connection with the block shown in Fig. 2, for more clearly disclosing its operation upon the bed of the press.

For the operation of the blocks the cross-bars 45 are arranged on opposite sides of the impression-cylinder and fixedly secured in any suitable manner to the frames of the press—not shown. Upon each cross-bar is secured a similar number of dog-heads 44, corresponding with the number of blocks laterally spaced upon the bed, the several blocks in each longitudinal row being spaced in line with each other with respect to their cam-rails 40 and 41 in order to secure the consecutive engagement of the rails of the blocks with the dog-rollers 42, the two rails

in each block operating respectively upon rollers on opposite sides of the impression-cylinder. Assuming that the type-bed and impression-cylinder are traveling in the direction for printing, indicated by the arrows, and that the primary plates below the form-rollers 55 are receiving ink, in this position the upper surface of the secondary plates 15 will be below the printing plane and the position of the operating parts of the block will be as shown in Figs. 2, 3 and 4. The continued movement of the bed and block will cause the inclined initial end of cam-rail 41 to engage a dog-roller 42 disposed on the leading-in side of the cylinder and gradually raise the dog and its connected tongue 52 against the yielding action of its contained spring. The dog is retained in its uppermost position by the rail until the latter's recessed cam-section engages the roller, whereupon by the action of the spring the dog will gradually descend and its tongue will engage the recessed drive-lug 39, the motion of which will be arrested for a period governed by the contour of the cam, which is adapted to operate the dog for relatively moving the drive-lug into the position indicated by the dotted lines 39^a, Fig. 6, and to correspondingly move the arms 29 one step, causing the secondary plates 15 to be raised to their intermediate position, or printing plane, as shown below the impression-cylinder, for taking the required impression. From this position the form continues to advance and the opposite cam-rail 40 of the block will engage the dog-roller on the opposite or leading-out side of the cylinder, and, in like manner, cause the dog to engage and move the drive-lug from the intermediate position 39^a to the terminal position 39^b, thereby moving the arms 29 a second step and raising the secondary plates above the printing plane for receiving ink from the form-rollers 56. Upon the return movement of the bed these printing-plates engage their form-rollers a second time and are then depressed to their intermediate position by the reengagement of the last-mentioned dog, and pass idly under the impression-cylinder on a common level with the remainder of the form. The continued backward reciprocation of the bed and form causes a reengagement of the first-mentioned dog which further depresses the secondary plates into its lowermost or originally-mentioned position below the inking line of the primary plates. Thus at each revolution of the press each dog engages a block twice, traversing the same path, back and forth, and causing a vertical reciprocation of the secondary plates.

From the above description it will be seen that the two types of printing-plates may be separately inked in different colors and applied jointly for taking the impressions, and

furthermore that the arrangement of the blocks constituting the form may be adapted to a wide range of work.

It is to be understood that while I illustrate and describe the preferred embodiment of the invention, it is susceptible of various changes as regards its form, proportions, detail construction, and arrangement of parts without departing from the essential spirit and scope or sacrificing any of the advantages of the invention.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. The combination with the bed of a printing-press, of a plurality of printing-plate blocks secured thereon, means carried by the blocks for detachably securing primary plates in fixed relation therewith, secondary-plate holders mounted in said blocks and adapted for vertical movement therein, and means carried by said blocks and actuated by the movement of the bed to impart said vertical movement to said holders.

2. The combination with the bed of a printing-press, of a printing-plate block secured thereon, means carried by the block for detachably securing a primary plate in fixed relation therewith, separable primary-plate carriers adjustable in said block, vertically-movable secondary-plate holders mounted in said block in adjustable relation with the primary-plate carriers, and means carried by said block and actuated by the movement of the bed to impart said vertical movement to said holders.

3. The combination with the bed of a printing-press, of a printing-plate block secured thereon, cam-bars vertically-movable in said block, secondary-plate holders slidably mounted on the cam-bars, and means carried by said block and actuated by the movement of the bed to vertically move said cam-bars.

4. The combination with the bed of a printing-press, of a printing-plate block secured thereon and comprising a body provided with intermediate bars forming guide-spaces, cam-bars vertically movable in the guide-spaces of said block, secondary-plate holders slidably mounted on the cam-bars, and means carried by said block and actuated by the movement of the bed to impart said vertical movement to said cam-bars.

5. The combination with the bed of a printing-press, of a printing-plate block secured thereon, cam-bars vertically movable in said block and having cam-faces provided with dwells, secondary-plate holders slidably mounted on the cam-bars, an intermittently-movable drive-bar slidably mounted in the block and having arms engaging the cam-faces of the cam-bars, and means actuated by the movement of the bed to intermittently move said drive-bar.

6. In a printing-press, the combination

with a block comprising a body provided
with beveled guide members and intermedi-
ate supporting-bars, primary-plate carriers
having ends conforming with and slidably
5 engaging said beveled guide members and
bearing upon the intermediate bars, means
on the block for detachably securing a pri-
mary plate, secondary-plate holders later-
ally adjustable and vertically movable in

said block, and means actuated by the press 10
for vertically moving said holders.

Signed at New York in the county of
New York and State of New York this 2nd
day of June A. D. 1909.

WALTER J. WICKERS.

Witnesses:

M. O. FAHNESTOCK,

C. W. LOVELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
