(No Model.)

2 Sheets—Sheet 1.

F. I. GETTY.

PRINTING BLOCK.

No. 523,310. Patented July 17, 1894.

Fig. 1.

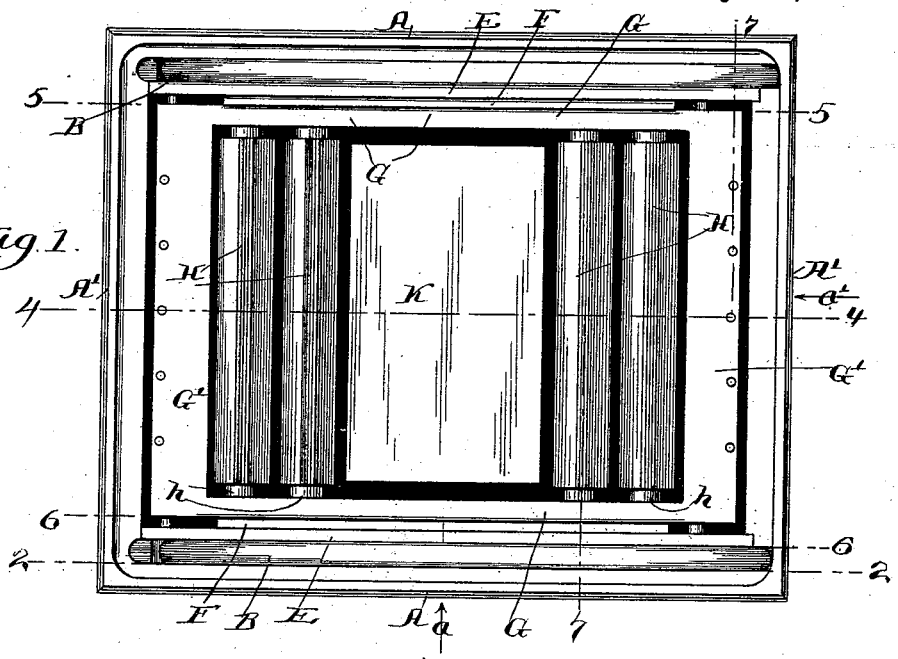


Fig. 2.

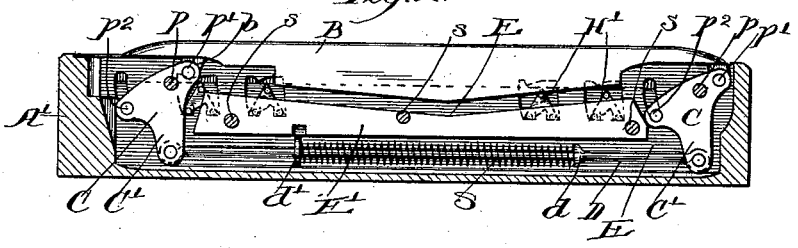


Fig. 3.

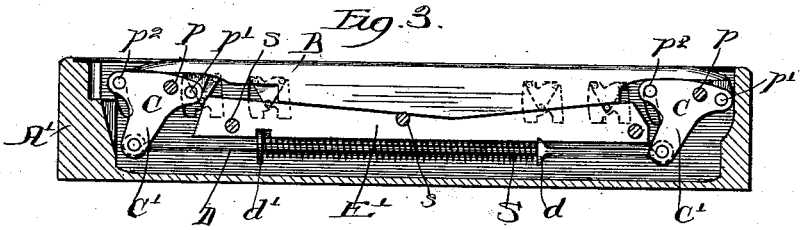
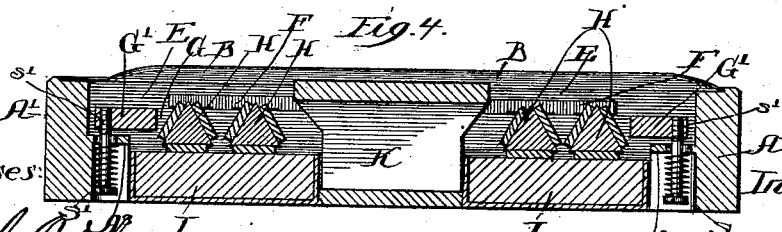


Fig. 4.



Witnesses:
Charles A. Stewey.
A. D. L. Ebbesen

Inventor
Fred I. Getty
by Wiles, Greene & Blum
attys

(No Model.) 2 Sheets—Sheet 2.

F. I. GETTY.

PRINTING BLOCK.

No. 523,310. Patented July 17, 1894.

Fig. 5.

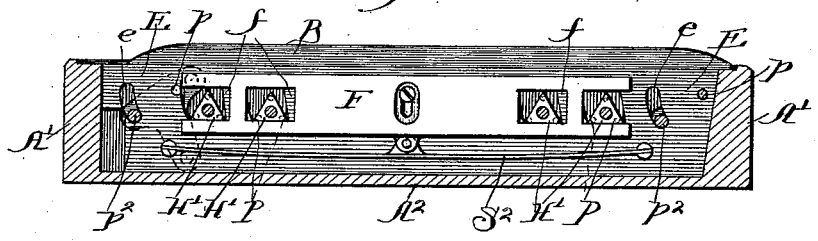


Fig. 6.

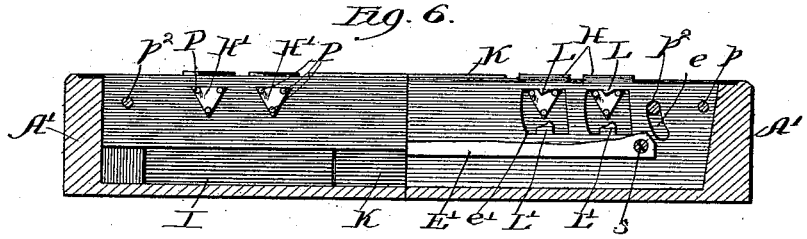


Fig. 7.

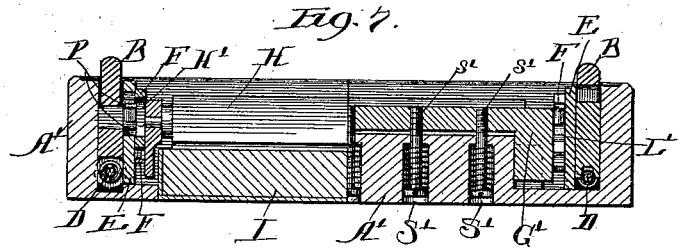
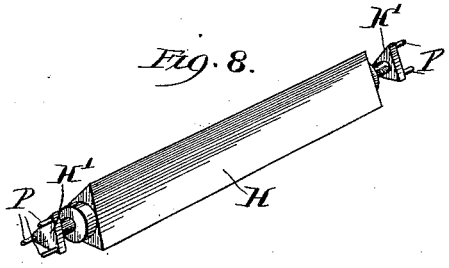


Fig. 8.



Witnesses:
Charles A. Shivey
A. D. H. Ebbesen

Inventor:
Fred I. Getty
by Wiles, Greene & Bitner
attys

UNITED STATES PATENT OFFICE.

FRED I. GETTY, OF SPRINGFIELD, ILLINOIS, ASSIGNOR TO THE NATIONAL CHROMATIC PRINTING COMPANY, OF SAME PLACE.

PRINTING-BLOCK.

SPECIFICATION forming part of Letters Patent No. 523,310, dated July 17, 1894.

Application filed August 19, 1892. Renewed December 21, 1893. Serial No. 494,502. (No model.)

To all whom it may concern:

Be it known that I, FRED I. GETTY, a citizen of the United States of America, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Printing-Blocks, of which the following is a specification.

My invention relates to improvements in printing blocks and is more especially an improvement upon the device shown, described and explained in my prior application, Serial No. 417,464, filed January 9, 1892.

The invention is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1 is a top plan of a block embodying my invention, this block being adapted to be set in an ordinary form of type. Fig. 2 is a longitudinal vertical section through the line 2—2, Fig. 1, the actuating bars B, being in their raised position. Fig. 3 is a similar view with said bars depressed. Fig. 4 is a longitudinal vertical section through the line 4—4, Fig. 1. Fig. 5 is a longitudinal vertical section through the line 5—5, Fig. 1. Fig. 6 is a longitudinal vertical section through the broken line 6—6, Fig. 1. Fig. 7 is a transverse vertical section through the broken line 7—7, Fig. 1, and Fig. 8 is a perspective view of one of the printing bars of the device.

In Figs. 2, 3, 4, 5, and 6, the view is in the direction indicated by the arrow *a*, Fig. 1, in Fig. 7 the view is in the direction indicated by the arrow *a'*, Fig. 1.

In the views, A, A are the side pieces, and A', A' the end pieces of a metal box having a bottom A^2, and E, E are vertical plates parallel with the sides A, A, and fastened to them by screws *s*, *s*, Figs. 2 and 3, which pass through the side pieces A, and plates E, and also through cleats E', lying between the side pieces and plates and maintaining a suitable space between them. In the spaces above the cleats E', are two horizontal operating bars B, B, connected by pivots *p'*, with T-shaped rocking levers C, supported by pivots *p*, whose ends are supported in the side pieces A, A, and plates E, E. Each of the levers C, is provided with a downwardly extending stem C', and the ends of the stems of the two levers on each side of the block are connected by a rod D, Figs. 2, and 3, lying below the corresponding cleat E'. The rod is provided with a shoulder *d*, and is encircled by a washer *d'*, lying in a slot in the side wall of the box and in the plate E, and free to move up and down, but in no other direction. A spring S, is coiled about the central portion of the rod and presses in one direction against the shoulder *d*, and in the other direction against the washer *d'*, and thus tends to hold the levers C, C, and bar B, in the position shown in Fig. 2, the pivot *p'*, of each lever being above the pivot *p*, and the bar being above the level of the top of the box. Downward pressure may, however, be applied to the bar for the purpose of overcoming the resistance of the spring and rocking the levers C, C, until they reach the position shown in Fig. 3, when the upper edge of each of the bars B, B, will be level with the top of the box. It will be seen from this description and from an examination of the drawings that downward pressure applied at any point of either of the bars D, must depress it equally throughout its entire length, and that the bar must always be in a horizontal position.

Within the rectangle formed by the plates E, E, and the ends A', A', of the box lies a rectangular frame made up of side pieces G, G, and end pieces G', G', held in place by means of screws *s'*, Figs. 4, and 7, the ends of the screws being seated in the end pieces G', of the frame, and the heads and shanks of the screws being in suitable recesses in the end pieces of the box. Springs S', encircle the shanks of the screws *s'*, and press downward upon the heads thereof, and upward against flanges A^3, at the upper ends of the sockets. The pressure of these springs thus tends to hold the frame down to its lowest possible position. The side pieces G, G, of the frame are connected at four points by pivots p^2, p^2, with the ends of the rocking levers C, C, opposite the pivots *p'*, which connects said levers with the operating bars B, B. The consequence of this connection is that the rocking of the levers C, C, in either direction upon their stationary pivots *p*, *p*, moves the bars B, B, in one direction, and the frame G, G', in the opposite direction, so that when the bars B, B, are in the raised position shown in

Fig. 1, the frame G, G′, is depressed, and when the bars B, B, are depressed, the frame is raised.

In the side pieces G, G, of the frame is journaled a series of prismoidal printing bars H, H, preferably triangular in cross-section, and so placed that when the frame G, G′, is in its lowest position one face of each of the printing bars may rest upon an inking-pad I, fastened to the bottom of the box. On each end of each of the bars H, is formed a triangular plate H′, and these triangular plates lie in openings *f*, formed in vertical plates F, F, Fig. 5, which lie between the plates E, E, and the side bars G, G, of the movable frame. Each of the triangular plates H′, is provided with pins P, P, P, placed at its angles, and these pins lie in openings *e*′, in the plates E, E, each of said openings being provided with upper and lower marginal lugs, L, L′.

Each of the lugs, L, L′, is approximately at the center of the upper or lower horizontal margin of the opening in which it lies and each of them is formed with inclined faces adapted to guide and deflect the pins, P, P, P, upon the plates, H′, as the printing bars move downward or upward. When the printing bars are in their raised position as shown in Fig. 6 one of the sides of each of the triangular plates, H′, is in a horizontal position, the body of the triangle being below it and one of the pins, P, being at the vertex of the lowest angle of the triangle. If now the frame, G, G′, and the printing bars be pressed downward, each of these lowermost pins on the triangles, H′, must strike the oblique face of the corresponding lug, L′, and be thereby deflected so that when the printing bars reach their lowest position as indicated in Fig. 1, two of the pins of each plate, H′, must lie on opposite sides of the corresponding lug, L′, and one of the faces of each of the corresponding bars must thereby be held in a horizontal position and must form the lower side or bottom of the bar. When the frame is again moved upward each bar must be again partly rotated by the contact of its pins with the lugs, L, at its ends; and this operation is repeated so often as the frame is depressed or raised, the general result being a step by step rotation of the printing bars.

Each of the plates F, F, is connected with a spring s^2, Fig. 5, so placed that the complete depression of the printing bars presses the spring downward from its normal position, and their complete elevation presses the spring upward from its normal position. The upper or lower margin of each of the openings *f*, in the plates F, F, is therefore pressed against the edge of the corresponding plate H′, in either position of the frame G, G′, and the plate F, and spring S^2, thus assist in perfecting the adjustment of the printing bars in either of their positions.

The operation of the device thus described, is substantially the same as that of the device shown and described in my prior application already mentioned. The block being set in a form of type stands in the position shown in Fig. 2, the operating bars B, B, being above the level of the box A, A′, and the faces of the printing bars being in contact with the inking-pad. The passage of the yielding inking-rollers over the edges of the bars B, B, does not exert sufficient force to depress them, and the printing bars H, H, are therefore not touched by the inking rollers. As the form passes under the impression cylinder, however, the pressure of the cylinder upon the bars B, B, depresses them and raises the printing bars H, H, and, at the same time, rotates them sufficiently to bring one of the faces of each bar into the horizontal plane of the upper surface of the type in the form. The characters upon the printing bars leave an impression upon the paper carried by the cylinder, this impression being in ink of the color furnished by the inking-pads I, I, this ink being wholly independent of that furnished to the body of the form by the inking rollers. As soon as the impression cylinder has passed over the bars B, B, they are pressed upward by the springs S, S, and the frame G, G′, again drops down carrying with it the printing bars which are partly rotated in their downward movement so as to present new faces to the inking-pads.

It is evident that a sufficient number of bars may be mounted in the frame G, G′, to extend from one end to the other thereof, or only a part of the space in the frame may be filled with these movable printing blocks, the remainder of the space being filled by a stationary block K, Figs. 1 and 4, adapted to be inked by the inking-rollers of the press and to operate the same as any other stationary type.

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

1. In a device of the class described, the combination with a box adapted to be set in a form, of a vertically moving frame lying within the box, prismoidal printing bars pivoted in said frame, means substantially as shown and described for imparting step by step rotation to said printing bars, vertically movable operating bars lying between the walls of the box and the walls of the frame, and oscillating levers pivoted to the box and each having one of its ends pivoted to said movable frame and its opposite end pivoted to one of said operating bars whereby depression of the bars rocks said levers and thereby raises the said frame and printing bars; substantially as shown and described.

2. In a device of the class described, the combination with a box set in a form, of a vertically movable frame lying within the box, printing bars supported by said frame and moving with it, vertically movable operating bars lying between the walls of the box and the walls of the frame, and oscillating levers also lying between the walls of the box and the walls of the frame and pivoted to the box,

said levers being placed at opposite ends of said operating bars respectively, and each lever having one of its ends pivoted to said movable frame and its other end pivoted to the corresponding end of one of said operating bars whereby depression of the bars rocks all of said levers simultaneously and equally and thereby raises said frame symmetrically; substantially as shown and described.

3. The combination with the box, A, A′, the vertically movable bars, B, B, and the frame, G, G′, lying within the box and between said bars, of printing bars, H, H, pivoted in said frame, rocking levers, C, C, having extensions, C′, C′, the rods, D, D, joining said extensions and the springs S, S, pressing said rods longitudinally, each of the levers, C, C, being pivoted at its center to the box and having its opposite ends pivoted respectively to the frame, G, G′, and to one of the bars, B, whereby the pressure of the springs, S, S, rocks the levers, C, C, in one direction and tends to hold the bars in their raised position and to depress the frame; substantially as shown and described.

4. The combination with the box A, A′, frame G, G′, printing bars H, H, means, substantially as shown and described, for raising and lowering said frame and for effecting step by step rotation of said printing bars, of the triangular plates H′, formed on said printing bars, the vertically moving plates F, F, formed with openings *f*, inclosing said triangular plates, and the springs S^2, adapted to resist either upward or downward movement of the plates F, F, and thereby to perfect the adjustment of the printing bars; substantially as shown and described.

FRED I. GETTY.

Witnesses:
SAML. D. SCHOLES,
GEO. A. WOOD.