(No Model.)

2 Sheets—Sheet 1.

F. I. GETTY.

CHROMATIC PRINTING DEVICE.

No. 523,309. Patented July 17, 1894.

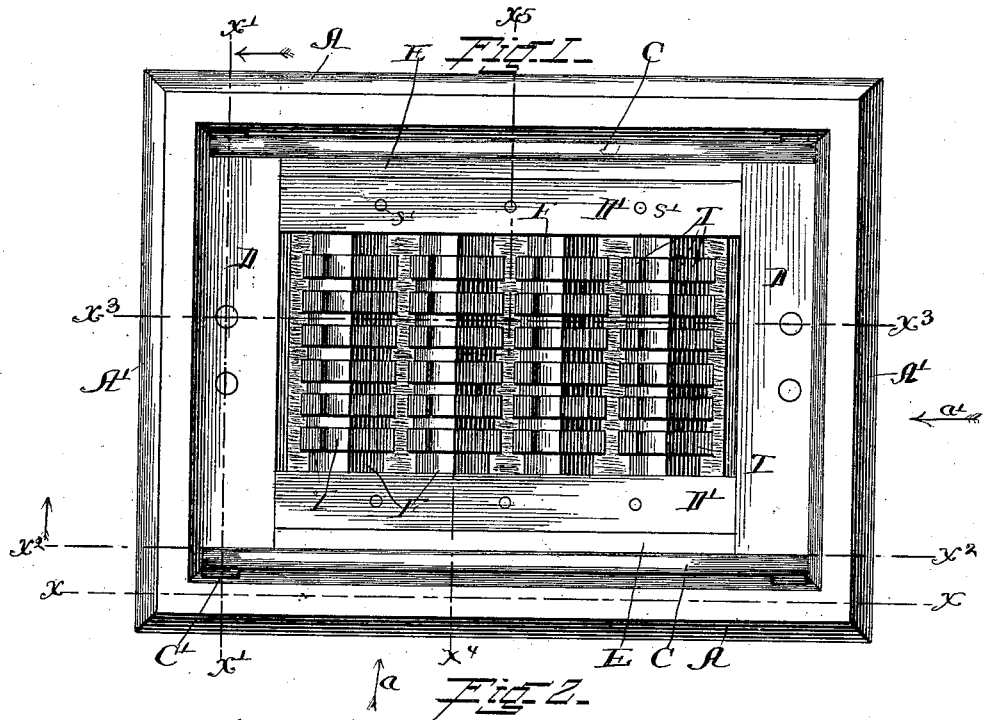


Fig. 1.

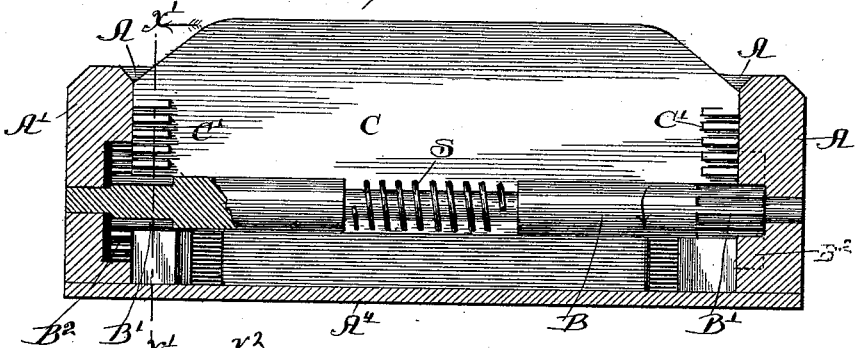


Fig. 2.

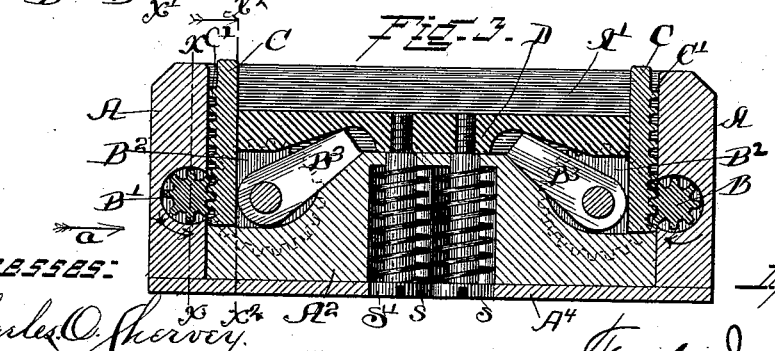


Fig. 3.

Witnesses:
Charles O. Shervey.
Gerald Mahony

Inventor:
Fred I. Getty
by Wiles, Greene & Bitzer
his Attorneys.

(No Model.) 2 Sheets—Sheet 2.

F. I. GETTY.

CHROMATIC PRINTING DEVICE.

No. 523,309. Patented July 17, 1894.

Fig. 4.

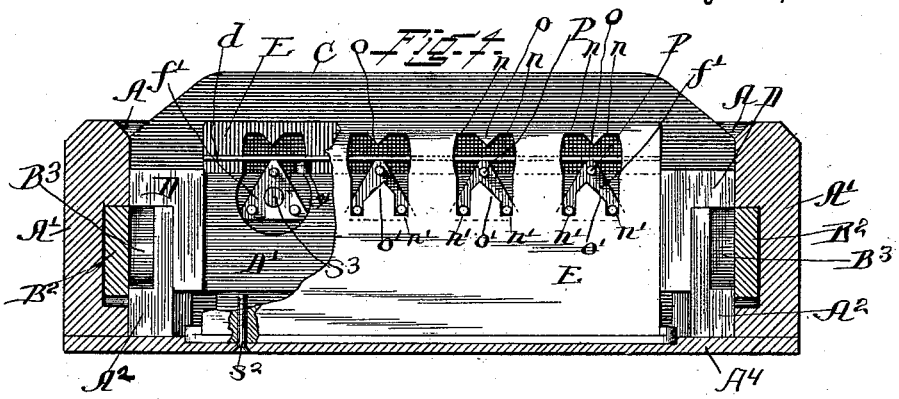


Fig. 5.

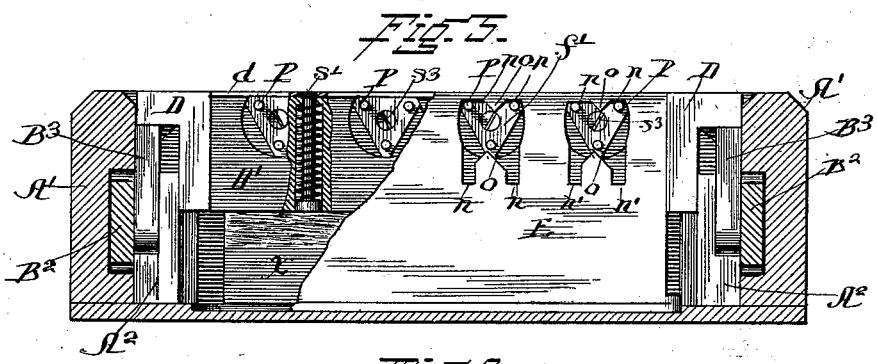


Fig. 6.

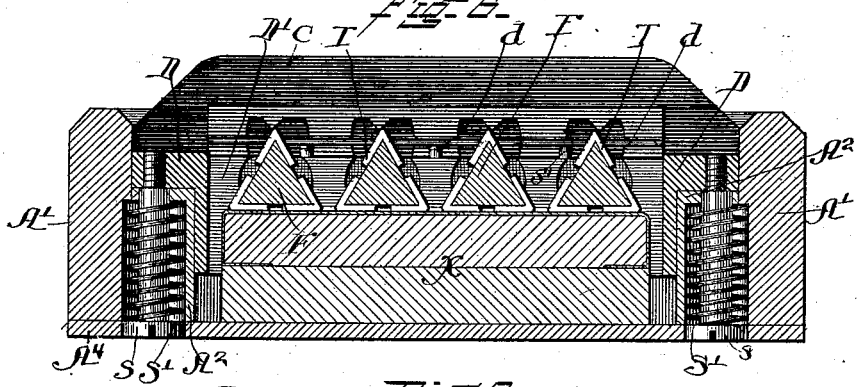
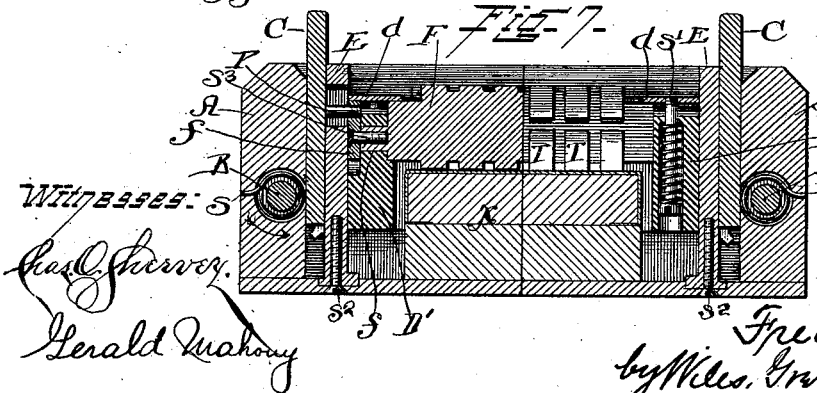


Fig. 7.



Witnesses:
Chas. C. Shriver.
Gerald Mahony

Inventor:
Fred I. Getty
by Miles, Greene & Bitner,
his attorneys.

UNITED STATES PATENT OFFICE.

FRED I. GETTY, OF SPRINGFIELD, ASSIGNOR OF ONE-HALF TO IRVING W. VAN ZANDT, OF BLOOMINGTON, ILLINOIS.

CHROMATIC-PRINTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 523,309, dated July 17, 1894.

Application filed January 9, 1892. Renewed December 19, 1892. Again renewed November 23, 1893. Serial No. 494,501. (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 Chromatic-Printing Devices, of which the following is a specification.

My invention relates to improvements in chromatic printing devices, its object being to provide a practically operated self-inking block, adapted to be set in an ordinary form of type in the printing-press and to print in the color furnished by its own inking mechanism which may be entirely different from that furnished to the remainder of the form by the inking rollers of the press. By the use of such a device an advertisement or any other matter may be printed in a newspaper, in any desired color, while the body of the paper is printed in black in the ordinary manner. The matter thus printed in color is evidently made much more noticeable than if it were printed in black and thus secures a prominence which adds greatly to its attractiveness and value.

The invention, by means of which I have obtained this object, is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1 is a top plan of a device embodying my invention. Fig. 2 is a vertical section through the line x—x, Figs. 1 and 3, the view being in the direction indicated by the arrow, a, in each of said figures and the side wall, A, being removed to show construction. Fig. 3 is a vertical section through the line x'—x', Figs. 1 and 2, the view being in the direction indicated by the arrow, a', Figs. 1 and 2. Fig. 4 is a vertical section through the line x^2—x^2, Figs. 1 and 3, the view being in the direction indicated by the arrow, a, in each of said figures and the printing-bars being in contact with the inking-pad of the device and not in position to print. Fig. 5 is a view similar to that shown in Fig. 4, except that the printing-bars are in position to print. Fig. 6 is a vertical section through the line x^3—x^3, Fig. 1, and Fig. 7 is a vertical section through the broken line x^4—x^5, Fig. 1, the part x^4 of the line being through the longitudinal center of one of the printing-bars and the part x^5 of the line being between two printing-bars.

In the views A, A, A′, A′, are the side and end walls, respectively, of a preferably rectangular metal box, provided with a suitably secured bottom plate A^4 and containing the working parts of my invention. To each of the end walls is secured a bar, A^2, of less height than that of the wall and serving to support the inner ends of the arbors of the gear wheels, B^2, hereinafter mentioned.

Each of the side walls, A, is bored out or recessed from end to end for the reception of a shaft, B, Figs. 2, and 7, reduced in size near its center and having its reduced portion encircled by a spring, S, one end of which is fastened in the shaft, while the other end enters the side wall, the spring being so coiled and under such tension as to rotate the shaft in the direction indicated by the arrow thereon in Figs. 2, and 7. On each end of the shaft is formed a pinion, B′, Figs. 2, and 3, of such length and so placed that a portion of it engages a rack, C′, on the corresponding end of a vertically sliding plate, C, lying in close contact with the side wall of the box, while the remainder of it engages a gear-wheel, B^2, set in a recess in the corresponding end wall of the box. Each of the gear-wheels, B^2, is provided with an arm, B^3, Fig. 3, lying in a recess in the corresponding plate, A^2; and as each of the shafts, B, has a pinion at each of its ends, each of the two plates, C, C, is evidently forced upward by pressure, applied to both its ends, and each of the four gear-wheels B^2, is rotated in a direction opposite to that indicated by the arrow on the pinion B′, in Fig. 3, the arms B^3, of the gear-wheels being thereby pressed downward and normally held in the position shown in said figure. Within the box, thus described, lies a vertically movable rectangular frame made up of end bars, D, D, and side bars, D′, D′, of metal, the end bars being of such length as to project slightly beyond the side bars on either side, leaving recesses for the reception of plates, E, E, Figs. 1, 4, 5, 6, and 7, these plates being stationary and secured to the bottom plate of the box by means of screws, s^2, Figs. 4, and 7. The end bars, D, D, of the

frame lie just within the plates, A^2, of the end walls of the box, but are provided at their upper edges with horizontal flanges extending outward and resting normally upon the upper edges of the plates, A^2. Suitable sockets are formed in the plates, A^2, for the reception of screws, *s*, *s*, Figs. 3, and 6, whose ends enter and engage the overhanging edges of the end bars, D, D, and springs, S', S', encircling the screws and pressing downward against the heads thereof and upward against the ends of the sockets tend to draw the frame, D, D', downward and hold the flanges of its end bars in close contact with the upper edges of the plates, A^2. The ends of the arms, B^3, of the gear-wheels, B^2, lie immediately under and in contact with the flanges of the end bars, D, D, of the movable frame, as shown in Figs. 3, 4, and 5; and it is evident from the foregoing explanations of the relations of the pinions, B', gear-wheels, B^2, arms, B^3, plates, C, and frame, D, D', that if the plates, C, be pressed downward with sufficient force to overcome the resistance of the springs, S, S', the free ends of the arms, B^3, must be raised and the frame, D, D', be pressed upward from the position, shown in Figs. 3, and 4, to that shown in Fig. 5.

Within the frame, D, D', are suspended a series of transverse printing-bars, F, F, preferably prismoidal in form and provided with type T, T, formed upon or attached to their faces, the type being of any desired design and adapted to print any desired characters or symbols. Each of the printing-bars is provided at its ends with gudgeons, *f*, Fig. 7, journaled in the end bars D' of the frame, and plates, *f'*, corresponding in shape to the cross-section of the printing-bars, are fastened to the ends of the gudgeons and lie in recesses in the outer faces of the end bars, D', of the frame (see Figs. 4, 5, and 7). Metal strips, *d*, lie along the upper edges of the side bars, D', of the frame and across the ends of the printing-bars, and these strips are drawn downward by means of screws, *s'*, set in sockets in the side bars, D', and encircled by springs which press downward upon the heads of the screws as illustrated in Figs. 5, and 7. The printing-bars, F, and plates, *f'*, as shown, are triangular and each of the plates is provided with a series of pins, P, P, P, placed at the vertices of its three angles, all the pins of each of the plates being within a corresponding opening in the adjacent stationary plate, E. Each of the openings in the plates, E, is formed with inclined faces, O, O', in its upper and lower margins, respectively, and has also in its upper margin two horizontal faces, *n*, *n*, and its lower margin two similar faces, *n'*, *n'*, the two horizontal faces in each margin of the opening being in the same line and on opposite sides of the inclined face, *o* or *o'*.

When the parts are all in their normal position, as shown in Figs. 4, 6, and 7, two of the pins, P, P, of each of the plates, *f'*, lie in contact with the horizontal faces, *n'*, *n'*, of the corresponding opening in the plate, E, and one of the faces of each of the printing-bars is thus held in a horizontal position and looks directly downward. In this position all these horizontal faces of the printing-bars are in contact with the upper surface of an inking-pad, X, Figs. 5, 6, and 7, fastened to the bottom plate of the box, A, A', and the type upon these horizontal faces are thus supplied with ink and prepared for printing at the next operation of the device.

If now the plates, C, C, be pressed downward the frame, D, D', and the printing-bars suspended in it must be pressed upward in the manner hereinbefore explained; and in this upward movement, the pin, P, at the upper angle of each of the plates, *f'*, must strike the inclined face, *o*, at the upper margin of the opening in which it lies and thus be moved laterally along the margin of the opening until it reaches one of the horizontal faces, *n*, *n*. This lateral movement of the pin, P, accompanied by continuing upward movement of the frame, D, D', rotates each of the printing-bars in such a way that at the conclusion of the movement two of the pins P, P, on each of the plates, *f'*, rest against the horizontal faces, *n*, *n*, at the upper margin of the corresponding opening in the plate, E, thereby holding one of the faces of the printing-bar in a horizontal position in which it looks directly upward. This position of the printing-bars is illustrated in Fig. 5 and when the parts are in this position, if the plates, C, C, be allowed to move upward under the influence of the spring, S, the frame, D, D', must drop down to its normal position carrying the printing-bars with it. In this downward movement the pin, P, at the lower angle of each of the plates, *f'*, strikes the inclined face, *o'*, below it and moves laterally downward until it reaches one of the horizontal faces, *n'*, this lateral and downward movement being such as to rotate the printing-bars, so that at the close of the movement two of the pins, P, P, on each plate lie in contact with the faces, *n'*, and the horizontal faces of all of the printing-bars look downward in the manner, shown in Figs. 4, 6, and 7, and already described. It will be observed that the inclined faces, *o'*, in the right-hand half of Fig. 4 incline to the right while in the left-hand half of the figure they incline to the left; and also that the inclined faces, *o*, in the right-hand half of the figure, are at the right-hand side of the centers of the openings in the plate, E, while in the left-hand half of the figure, they lie on the left side of the centers of the respective openings. This arrangement rotates each of the printing-bars step by step in one direction, the rotation of the bars in one half of the block being in one direction and that of the bars in the other half being in the opposite direction, although all of the bars might be rotated in the same direction. When the printing-bars are in the position, shown in Figs. 4, and 6, each of the

strips, *d*, is raised, but when the printing-bars begin to rotate in the upward movement of the frame, D, D′, the downward pressure of the strips upon the printing-bars assists in the rotation and tends to bring them speedily and positively into the position, shown in Fig. 5. When the printing-bars reach the position shown in Fig. 5, their horizontal upper faces lie substantially in the plane of the upper edges of the box, A, A′, and the type upon these surfaces are intended to be in the plane of the type of a form resting on the same bed which supports the printing-block. On the other hand when the printing-bars are in the position, shown in Figs. 4, and 6, they are suitably below the printing-face of the form and are therefore out of reach of the inking-roller which supplies ink to the body of the form.

In use the block, thus described and explained, may be locked with ordinary type in a form resting on the reciprocating bed of any press in which the paper is carried and pressed upon the type by a rotating cylinder. The printing-bars are in the position, shown in Figs. 4, 6, and 7, and the plates, C, C, project above the edges of the box, A, A′. As the form passes under the inking-rollers the faces of the ordinary type are inked, but the type upon the printing-bars, F, are wholly below the inking-rollers and receive no ink from them the pressure of the yielding inking rollers upon the edges of the plate C, C, being insufficient to press them downward and raise the printing bars. As the form passes under the paper cylinder, the plates, C, C, are pressed down by the cylinder and the frame, D, D, is raised until the printing-bars reach the position, shown in Fig. 5, one face of each of the printing-bars being brought to the level of the type of the form and thereby pressed against the paper on the cylinder which thus receives an impression from the type of the printing-bars in the color furnished to them by the inking-pad, X. As soon as the pressure of the cylinder upon the plates, C, C, is removed, they rise again under the influence of the spring, S, thereby bringing a fresh face of each of the printing-bars into contact with the inking-pad. As this operation is repeated the faces of the printing-bars are successively inked and pressed against the paper on the cylinder, an impression being printed upon the paper at each operation.

It will be observed that in the device hereinbefore described, each of the printing bars is rotated in each vertical movement of the frame D, D′, whether downward or upward. This is a necessary feature of the operation of the device if the printing bars be prisms of uneven numbers of faces, since in that case no two faces of any bar can be parallel, and the faces can only be presented successively to the horizontal inking-pads, and the horizontal plane of the form, by partial rotation of each bar in each of its vertical movements. I greatly prefer to use bars of triangular cross-section for the reason that the faces of such triangular bars may be made of such width as to practically form an unbroken printing surface while still leaving sufficient space for the bars to rotate freely without touching each other. This being so, the step by step rotation of each of the bars at each vertical movement of the printing frame is an important feature of the operation of the device, and I desire to claim the construction by which I secure this feature of operation, as distinguished from that in which printing bars are partially rotated by the movement of their support in one direction but are not rotated in the reverse movement thereof.

I am aware that various details of construction of the device thus presented may be varied without departing from the principle of my invention and I desire, therefore, not to limit my invention to the forms shown and described, but to give it the scope expressed in the following claims, to wit:

1. In a device of the class described the combination with a suitable box adapted to be set in a printing-form, of a vertically reciprocating frame lying within said box, vertically reciprocating plates also lying within said box and having their edges above the plane of the face of the form and pivoted levers connected with said plates and having their free ends beneath said movable frame whereby downward movement of said plates raises the frame and brings the printing-face of the bar into the plane of the face of the form.

2. The combination with the box, A, A′, adapted to be set in a printing-form, of the shafts, B, provided with pinions, B′, the plates, C, provided with racks, C′ engaging said pinions, the gear-wheels, B^2, also engaging said pinions and provided with arms, B^3, the frame, D, D′, resting on the free ends of said arms and a printing-block supported by said frame and having a printing-face lying normally below the plane of the face of the form, adapted to be raised into said plane by downward movement of the plates, C, and the consequent raising of the frame.

3. In a device of the class described the combination with a suitable box, adapted to be set in a printing-form, of the vertically reciprocating frame supported in the box and inking-pad secured within the box, a prismoidal printing-bar pivoted in the frame and adapted to be partially rotated at each vertical movement of the frame and means for raising said frame through pressure applied to the form whereby the faces of said prismoidal printing-bar may be successively pressed upon said inking-pad and in like succession brought into the plane of the face of the form.

4. In a device of the class described the combination with a suitable box adapted to be set in a printing-form of a vertically reciprocating frame lying within said box, mechanism projecting above the face of the form and adapted when pressed downward to raise said frame, an inking-pad secured within the box and a series of prismoidal printing-

bars journaled in the frame and adapted to be partially rotated at each vertical movement thereof, whereby the faces of each bar may be successively presented to the inking-pad and successively brought into the plane of the face of the form.

5. In a device of the class described, the combination with a suitable box adapted to be set in a printing form, of a vertically reciprocating frame lying within said box, mechanism projecting above the face of the form and adapted when pressed downward to raise said frame, an inking pad secured within the box, and a series of prismoidal printing bars triangular in cross-section journaled in the frame and adapted to be partially rotated at each vertical movement thereof, whereby the faces of each bar may be successively presented to the inking-pad and successively brought into the plane of the face of the form.

6. The combination with the box, A, A′, the vertically reciprocating frame, D, D′, and means substantially as shown and described, for raising and lowering the frame, of the rotating printing-bars, F, pivoted in the frame, the stationary plates, E, secured within the box and outside the frame and the pins, P, projecting from the ends of the printing-bars and lying in openings in the plates, E, said openings being formed with marginal faces adapted to deflect said pins in the vertical movement of the frame and thereby to cause step by step rotation of the bars; substantially as shown and described.

7. The combination with the box the frame carrying the printing bars and means, substantially as shown and described, for raising the frame of screws, *s*, lying in sockets in the walls of the box and having their ends in engagement with the frame, and springs, S′, encircling said screws and pressing downward upon the heads thereof, whereby the frame is normally in its lowest position.

8. The combination with the box, A, A′, and frame, D, D′, carrying the printing bars of the shafts, B, having pinions, B′, the plates, C, formed with racks, C′, engaging said pinions, the gear-wheels B^2, also engaging said pinions and provided with arms, B^3, whose free ends impinge upon the lower face of the frame and springs, S, coiled about the shafts, B, and exerting a rotating force thereon, whereby the plates are normally held in their raised position and the frame is normally in its lowest position.

9. The combination with the box, A, A′, the reciprocating frame, D, D′, and the rotating prismoidal printing-bars journaled in said frame, of the strips, *d*, lying across the ends of the printing-bars, the screws, *s*′, lying in sockets in the walls of the frame and having their ends in engagement with said strips, and springs encircling said screws and pressing downward upon the heads thereof whereby said strips are constantly pressed downward upon said printing-bars; substantially as shown and described.

FRED I. GETTY.

Witnesses:
HARVEY J. CULP,
CHARLES E. SELBY.