(No Model.)

T. J. TURLEY.

CHROMATIC PRINTING DEVICE.

No. 500,784. Patented July 4, 1893.

Fig. 1.

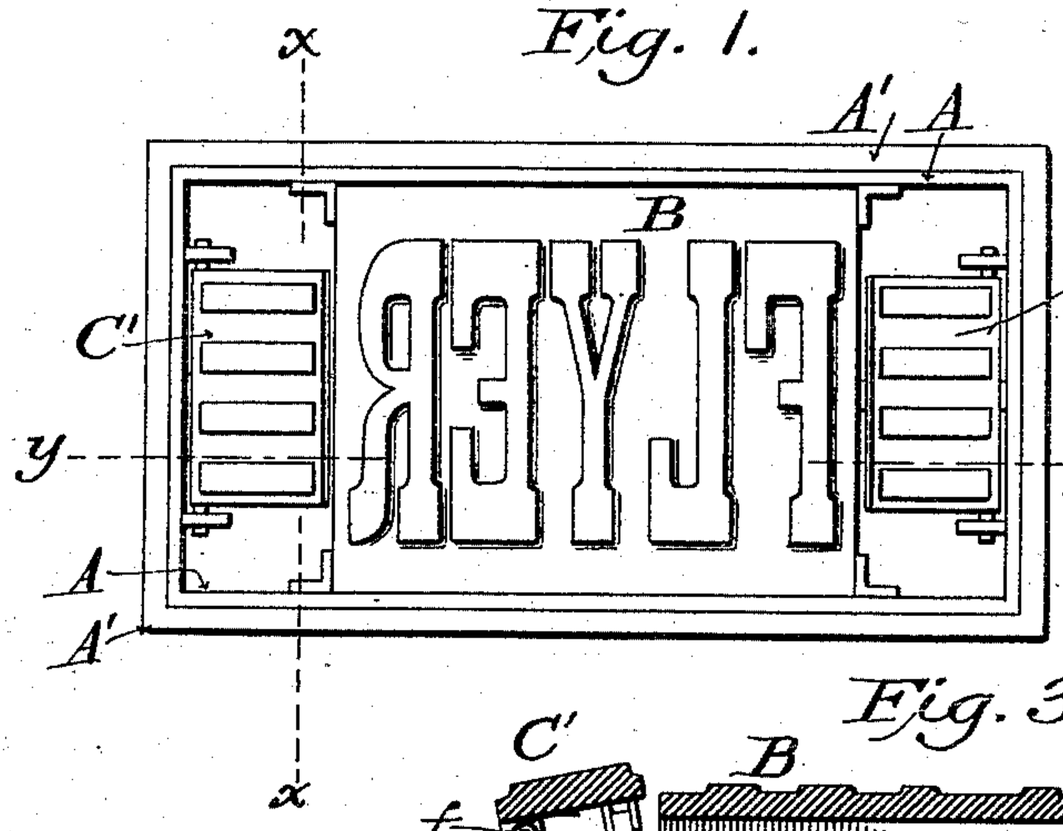

Fig. 2.

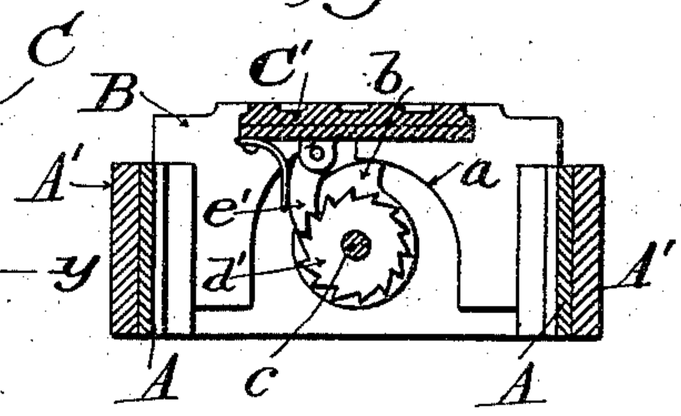

Fig. 3.

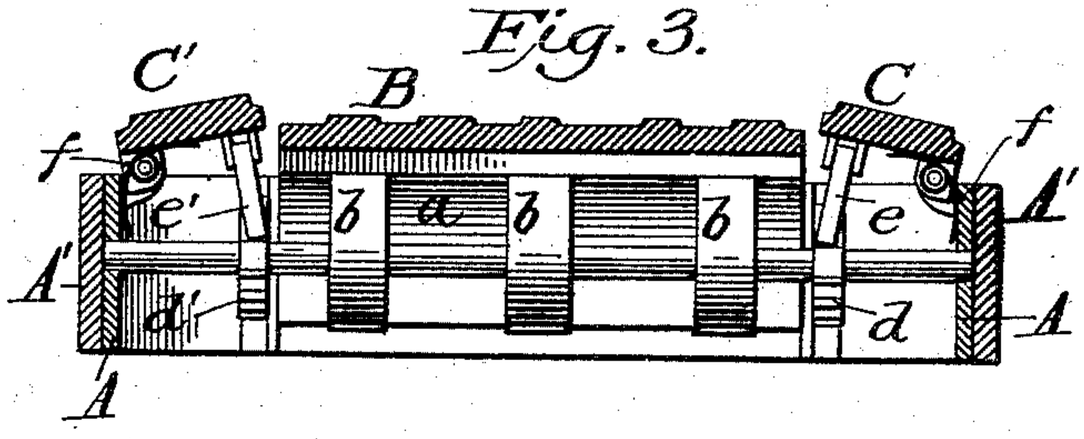

Fig. 4.

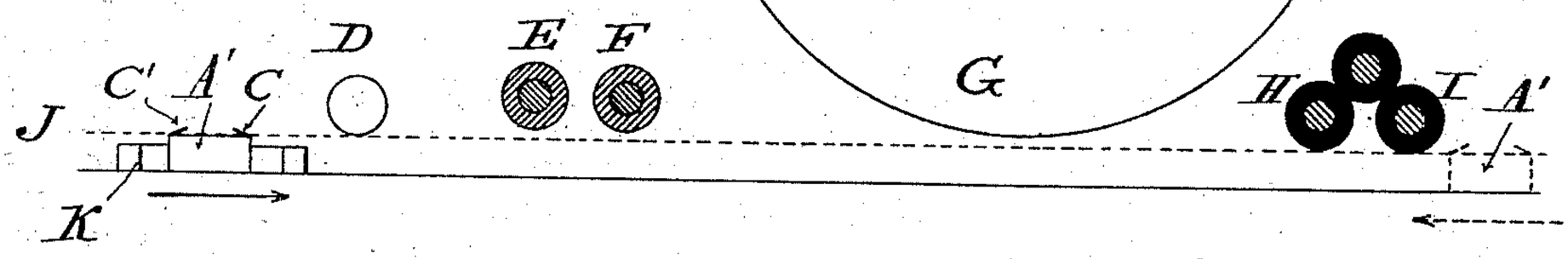

Fig. 5.

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UNITED STATES PATENT OFFICE.

THEODORE J. TURLEY, OF NASHVILLE, TENNESSEE.

CHROMATIC-PRINTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 500,784, dated July 4, 1893.

Application filed December 8, 1892. Serial No. 454,508. (No model.)

To all whom it may concern:

Be it known that I, THEODORE J. TURLEY, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Chromatic-Printing Devices, of which the following is a specification.

My invention relates to chromatic printing devices, and it consists, first, in a novel construction of the form, form-holder and attendant devices; and second, in the combination therewith of suitable means for elevating and depressing the form or one or more sections thereof, as hereinafter set forth and claimed.

In the drawings,—Figure 1 is a plan view of my improved form-holder; Fig. 2, a sectional view on the line *x—x;* Fig. 3, a sectional view on the line *y—y;* Fig. 4, a diagrammatic view of a press in which the form is designed to be used; and Fig. 5, a sectional view showing the form in its different positions.

A indicates an open frame or form holder; B, the form fitted within the frame and adapted to rise and fall relatively thereto.

In the drawings, the form B is represented as being an electrotype or stereotype block, but it is to be understood that this block may be formed with a recess in its upper face to receive short type when desired. This form-block B is cut away on its under side or face to form a bearing face or surface *a* upon which acts a cam or wiper *b;* the said cam or wiper is secured to a shaft *c* journaled in the frame A, as shown in Figs. 2 and 3. Secured to this shaft *c* are two ratchet wheels *d* and *d'*, which in the present instance are provided with fourteen teeth. These wheels are engaged, respectively, by pawls *e* and *e'*, which latter are carried by plates C C′ hinged or pivoted at their outer ends to the end bars of frame A, as shown in Figs. 1, 2 and 3. When these plates or arms C, C′ are depressed or pushed downward by any suitable means, they, through the pawl and ratchet connection, effect a rotation of the shaft *c* and cause the cams or wipers to act upon the form-block. These plates or arms are elevated or returned to their normal positions by means of light springs *f* shown in Fig. 3. The cams or wipers and the bearing faces *a* of the block B are so formed that as the shaft turns or rotates, the block B will be raised gradually, step by step, until it comes above the printing line, and after this it falls below the printing line. As the shaft rotates always in the same direction, it will be seen that the form-block will be raised up to and above the printing line at certain predetermined intervals and then allowed to fall below such line.

In Fig. 4, have shown one form of arrangement of mechanism for actuating the form raising and lowering devices. In this figure, D indicates a blind roller; E and F, the rollers for supplying one color (red) ink to the movable form-block; G, the impression cylinder; and H and I, the inking rollers for supplying another color (black) ink to the main portion of the form.

The dotted line J indicates the printing line, and the impression cylinder is shown as raised or elevated as occurs in this class of presses after an impression is made.

The frame or form-holder A or the supplemental frame A′ is represented as locked up in the usual form K, and is in position to travel in the direction of the arrow, and when in this position, the form or form-block B, which is already inked by rollers E, F, is below the printing line. Now, as the frame is carried beneath the blind roller D, the plate C is depressed, and the wheel *d* moved the distance of one tooth. When the plate C′ reaches the said roller D, the wheel will be turned the distance of another tooth. Continuing in its travel, the frame passes beneath the inking rollers E, F, but as these rollers are above the line J, they do not actuate the plates C or C′. So, too, as the cylinder G is above the printing line, it will not act upon the plates. The frame A now passes beneath the roller H, which, acting upon the plates C, C′ successively, causes a partial rotation of the shaft *c;* and when the frame passes beneath the roller I, a further partial rotation is effected by the depression of the plates. Frame A has now reached the position shown by dotted lines in Fig. 4, and begins to return or move in the direction of the dotted arrow, the impression cylinder meanwhile being brought down to the printing line. So far, the rollers D, H and I have caused the shaft to make six partial revolutions, or moved it through an arc corresponding to six

teeth of the ratchet wheels. Now, when the frame retraces its steps beneath the roller I, the latter acts upon the plates C′ and C and moves the ratchet wheels a distance equal to two teeth, which action is repeated by the roller H. Consequently, there have been, up to this point, ten partial revolutions of the shaft *c*. Continuing its travel frame A comes to the impression cylinder G, and the latter striking the plate C′, gives a further partial revolution to the shaft, but this movement of the shaft (acting through cam *b* and face *a*) brings the printing form or form-block B up to printing position, so that, as the form passes beneath the cylinder, the proper imprint or impression will be made by the form-block upon the paper on the cylinder. As the frame A passes beneath the cylinder, and just the instant that the impression is made, the cylinder acts upon and depresses the plate C and causes (through the connections *d*, *e* and cam *b*) an elevation of the printing form or form-block to a point above the printing line; in other words, it brings the form B up above the plates C C′ and into such position as to receive ink from the rollers E, F. The passage of the frame beneath the rollers E, F, effects therefore only the inking of the form B, as they are above the printing line and cannot act upon the plates C, C′. The frame passes from beneath these rollers E, F, to the blind roller D, where the plates C′, C are acted upon successively, and the cam or wiper *b* brought into such position as to allow the inked form *b* to fall below the printing line.

In order to permit the removal of the form-block and attendant mechanism from the main form of which it is part, the frame A, which carries these parts, will be removably fitted within a supplemental frame A′, which latter will remain locked up in the main form during the cleansing of the latter. This avoids the removal or cutting of the oil on the working parts by the lye used in washing. Where the form-block is very wide, it will be well to arrange several shaft *c* and cams *b* parallel to one another so as to afford a good bearing or support for the form-block, but as this involves merely a duplication of the mechanism shown, illustration thereof is not deemed necessary. If the number of rollers be decreased, the number of teeth on the ratchet wheels will be correspondingly decreased. Or, in case the number of rollers be increased, or the number of ratchet teeth be decreased, one of the plates C or C′ can be dispensed with. The plates C and C′ will be inked by the rollers H and I and will consequently make an impression upon the paper on the cylinder, in case the paper be wider than the form-block B is long; the impression thus made being in a color contrasting with the color of the impression made by the form-block. I have shown these plates as being arranged to print a series of wide lines or bars, but any other form of matter, ornamental or otherwise, may be applied to their faces. If the paper to be printed on, be only as wide as the block B is long, then these plates C C′ will not make any impression upon the paper.

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

1. A frame or form-holder provided with a printing form arranged to move in a right line to and above and below the printing line; in combination with a pivoted printing plate arranged in position to be acted upon by means outside of the frame, as the latter travels back and forth, and means operatively connecting the plate and form all substantially as shown and described.

2. In combination with an open frame or form-holder; a form mounted therein, and arranged to be brought to and above and below the printing line; a printing plate hinged to the frame, and means connecting the plate and form,—said plate and form being arranged in such relation to each other, that when the form assumes a type high position, the plate shall be at the printing point, all substantially as shown and described.

3. In combination with an open frame or holder; a form mounted therein, and provided with a bearing face *a;* a shaft *c*, provided with a cam or wiper *b* to engage the form, and provided also with a ratchet wheel; a pivoted plate, and a pawl carried by the plate to engage the ratchet wheel.

4. In a machine of the class described, the combination with a frame carrying a movable form or form-block; of plates C C′ and intermediate connections for raising the block to, above, and below, the printing line; and rollers for inking the main form and the movable form, and also for acting upon the plates, whereby the actuation of the movable form is effected by the inking.

In witness whereof I hereunto set my hand in the presence of two witnesses.

THEODORE J. TURLEY.

Witnesses:

HORACE A. DODGE,

WALTER S. DODGE.