(No Model.) 2 Sheets—Sheet 1.

D. E. MACK.

CHROMATIC PRINTING MACHINE.

No. 305,207. Patented Sept. 16, 1884.

Fig. 2.

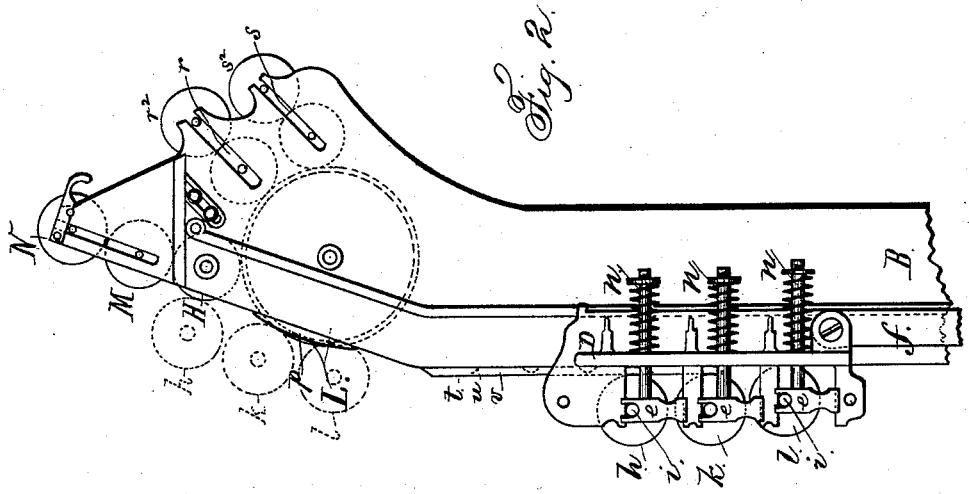
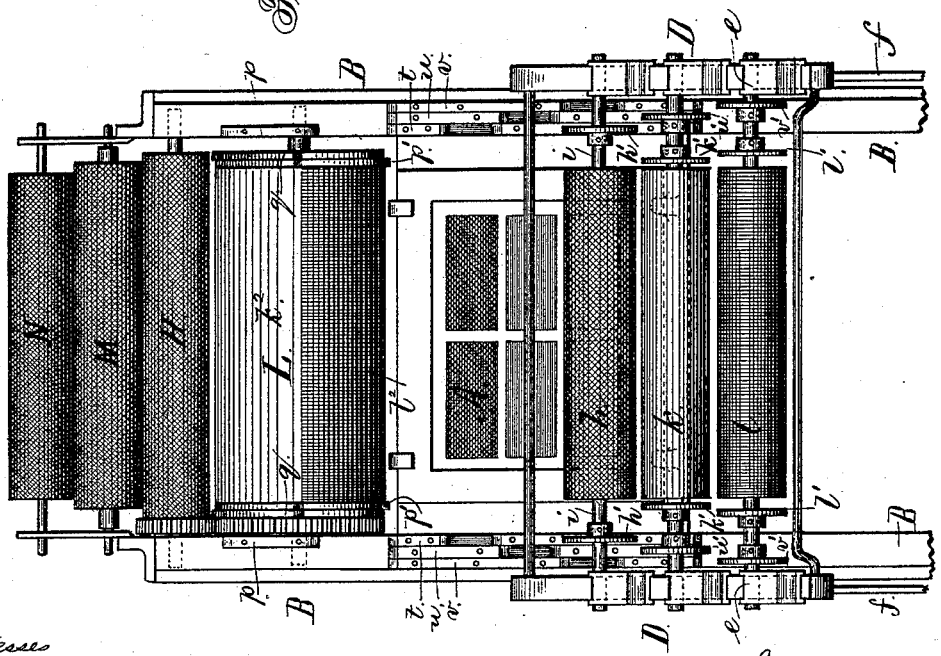


Fig. 1.



Witnesses

Chas. H. Smith

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Inventor

D. E. Mack

per Lemuel W. Serrell

Atty

(No Model.) 2 Sheets—Sheet 2.

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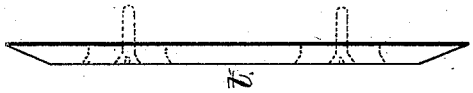
Fig. 5.



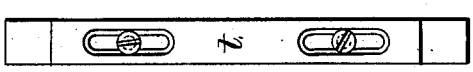
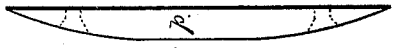


Fig. 6.



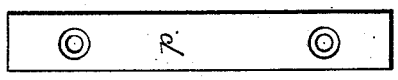


Fig. 4.

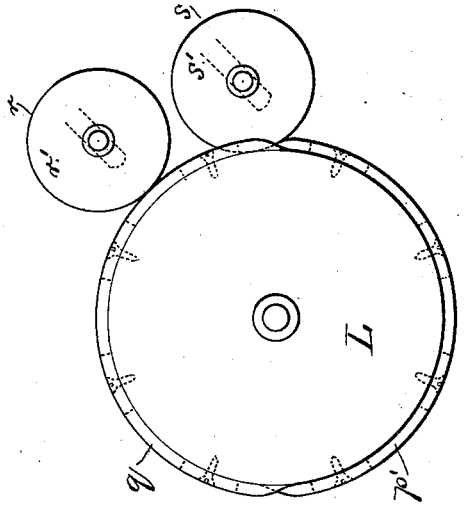


Fig. 3.

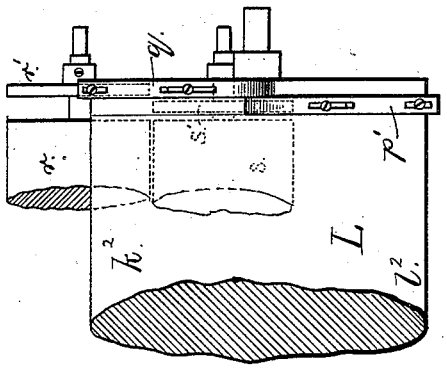
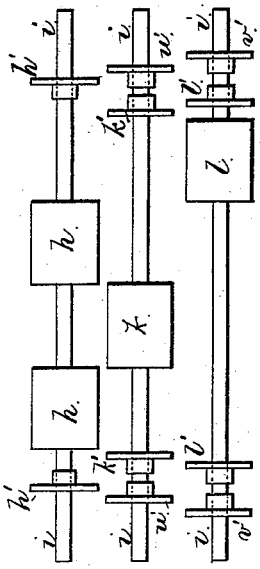


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

DENNY E. MACK, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF, AND GEORGE F. C. SMILLIE, OF PLAINFIELD, NEW JERSEY.

CHROMATIC-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 305,207, dated September 16, 1884.

Application filed September 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, DENNY ELBERT MACK, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Chromatic-Printing Machines, of which the following is a specification.

Presses have been made for printing in colors, and in some instances the inking-roller has been raised or lowered by the action of stationary offsets. In these cases a press had to be constructed with special reference to color-printing.

My improvement is made for rendering the distribution of the ink more uniform, for preventing the inking-rollers coming into contact with any wrong color, either on the distributing-surfaces or upon the types, and for using one distributing roller or cylinder for two or more colors without risk of the colors becoming mixed or blurred, and for using the ordinary press with but little changes.

In the drawings, Figure 1 is a front elevation of so much of a printing-press as is required to show my invention. Fig. 2 is an elevation endwise of the inking-rollers. Fig. 3 represents a portion of one of the ink-distributing cylinders and rollers in larger size. Fig. 4 is an end view of the same. Figs. 5 and 6 are front and side views of two forms of lifters, and Fig. 7 represents rollers for applying the colors in stripes or patches.

The form of types is represented at A. The same may, however, be wood cuts or any other printing-surfaces, such as stones in lithographic presses, &c. The means for giving the impression are not represented, as these may be of any known character.

The side frames, B, of the press form also the track for the traveling carriage D, containing the journal-boxes *e* of the composition inking-rollers. The carriage D receives its movement up and down upon the tracks or frames B in the ordinary manner. When raised, the respective composition rollers occupy the positions shown by dotted lines in Fig. 2, and when drawn down they pass over the surface to be inked, the links or connecting-rods *f* usually being employed to move the carriage D. The springs and slide-bars *n* to the journal-boxes *e* give the pressure for the inking-rollers upon the distributing-surfaces and upon the types or printing-surfaces.

The inking-rollers are shown as three in number, and marked *h k l*, and they are made of composition. The respective shafts *i* of the rollers pass into the journal-boxes *e*, and the disks *h′ k′ l′* are upon the shafts of the rollers having the same letters.

L is a drum or cylinder, forming a distributer for two or more colors. This is revolved by gearing or otherwise by the motive power of the press.

The distributer H is a roller geared to and revolving with the drum L, but not in contact therewith.

M N are working-rollers, the surfaces of which are in contact, and the roller M is revolved by contact with the roller H; hence the one color that is applied to the rollers H M N is thoroughly distributed and worked, and the inking-roller *h*, which comes in contact with H, receives therefrom the proper color, and that color is rendered uniform and even. As the roller *h* passes by the distributer-drum L, it is lifted so as not to touch the same. This is effected by the cam-lifters *p p*, fastened upon the track or edge of the frame B, which are in the path of the disks *h′* upon the shaft of the roller *h*; hence as the carriage D travels with the roller *h* up or down, the lifters *p*, acting upon the disks *h′*, force the roller *h* bodily away from L, and prevent the contact of the surfaces and prevent the colored inks on the respective surfaces becoming mixed.

The distributer-drum L is represented as adapted to working and distributing two different-colored inks—one color to each of the two rollers *k l*. It may be used for more than two colors if the parts described be increased in number.

At the respective ends of the distributer-drum L are the segmental lifters *p′ p′* and *q q*, and these are placed so that the lifters *p′ p′* act upon the disks *k′* of the inking-roller *k* and lift them during that portion of the revolution of the distributer L in which said lifters *p′* are in contact with such disks *k′*; hence the roller *k* will not be in contact with the portion l^2 of the distributer L, but it will be in contact with the portion k^2. The same may be

said in relation to the segmental lifters *q q*. They act to raise the roller *l* from contact with the surface k^2, but allow such roller to come into contact with the surface l^2 of the distributer L. It will be observed by reference to Figs. 1 and 3 that the lifters *p'* are in the line of movement of the disks *k'* as they are moved up and down by and with the carriage D, and that the disks *l'* are in line with the lifters *q;* hence the lifters *q*, as they revolve with the drum L, will not come into contact with the disks *k'*, neither will the lifters *p'* come in contact with the disks *l'*. These segmental lifters *p'* and *q* are of a length corresponding to the surface required for the different colors. I have shown them as equal in length, and hence as separating the distributing-drum into two equal varicolored inking-surfaces. The said distributer might be divided into more than two varicolored inking-surfaces, if desired.

The working-cylinders *r* and *s*, Figs. 2, 3, and 4, are upon shafts that occupy inclined slots in the frame, and hence they move toward the distributing-drum L; but upon the shafts of the roller *r* there are the disks *r'*, Figs. 3 and 4, corresponding in position to the disks *l'*, so that the lifters *q* prevent the roller *r'* from coming into contact with the surface k^2 of the drum L, and upon the shaft of the roller *s* there are the disks *s'*, that correspond in position to the disks *k'*, so that the lifters *p'*, acting on these disks, lift the roller *s* and prevent the same from coming into contact with the portion l^2 of the distributing-drum L. By this means the rollers *r* and *s* operate to work and distribute the respective colors of ink, and are raised from contact with the other color. The lifters *p' q* are connected to the distributing-cylinder L by screws passing through slots, so as to be adjustable and also changeable, as required. There are rollers s^2 and r^2 running in contact respectively with the rollers *s* and *r*, and to these an end movement is given by cams or screws, as usual in printing-presses, to spread the ink evenly. The roller N should also receive a similar end motion.

Upon the tracks or frame B, at the sides of the form A, I employ lifters *t u v* of any desired length. The lifters, being in pairs, are on each track or frame. These lifters *u v* act with the disks *u' v'* upon the shafts of the rollers *k l*, and the lifters *t* with the disk *h'* upon the shaft of the roller *h*, so that as the rollers are carried bodily over the types or printing-surface the varicolored rollers will be lifted from the surfaces at the places where their respective colors are not to be applied, and the absence of the lifters at any interval or space in the path of the disks on any particular roller allows such roller to come in contact with and to ink the types or printing-surface at that interval. The lifters are to be of suitable length and attached by screws through slots, so that they are adjustable and may be applied exactly where it is desired to remove any of the varicolored rollers from contact with the printing-surface, and by their absence allow such roller to be in contact with the types or printing-surfaces.

The rollers *h k l* may be in sections, as shown in Fig. 7, and receive their ink from the distributing-surfaces aforesaid and ink the types in longitudinal lines or patches. Lifters are not always required upon the frames at the sides of the printing-surfaces; but they are always needed with the distributing-rollers.

When the printing is upon a web drawn along progressively, I am able to ink two or more different surfaces, and to complete the impression in different colors simultaneously impressed; but each picture or device has its parts impressed successively.

I do not claim ink-rollers made in sections and receiving different colors from sectional rollers or drums, nor lifters that act to raise the ink-rollers or their carriages from the surfaces that supply the ink; neither do I claim a drum of segments for different colors by which the ink is applied in bands to the inking-rollers for the types. In my improvement the plurality of colors are applied to the surface of one cylindrical ink-distributer and taken therefrom by the composition inking-rollers, one color upon each roller, and applied to the desired portions only of the types.

I claim as my invention—

1. The cylindrical ink-distributing drum and the sectional lifters applied upon the end portions thereof, in combination with the composition inking-rollers and the respective disks on the shafts of the same, and the lifters at the sides of the form, whereby one ink-distributing drum is employed to ink each of a plurality of composition inking-rollers in different colors and the same are applied to the different portions of the types, substantially as specified.

2. The combination, with the inking-rollers *h k l*, of the ink-distributers L H, the lifters *p p'* and *q*, and the disks *h' k' l'*, substantially as set forth.

Signed by me this first day of September, A. D. 1883.

DENNY E. MACK.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.