

March 3, 1942.

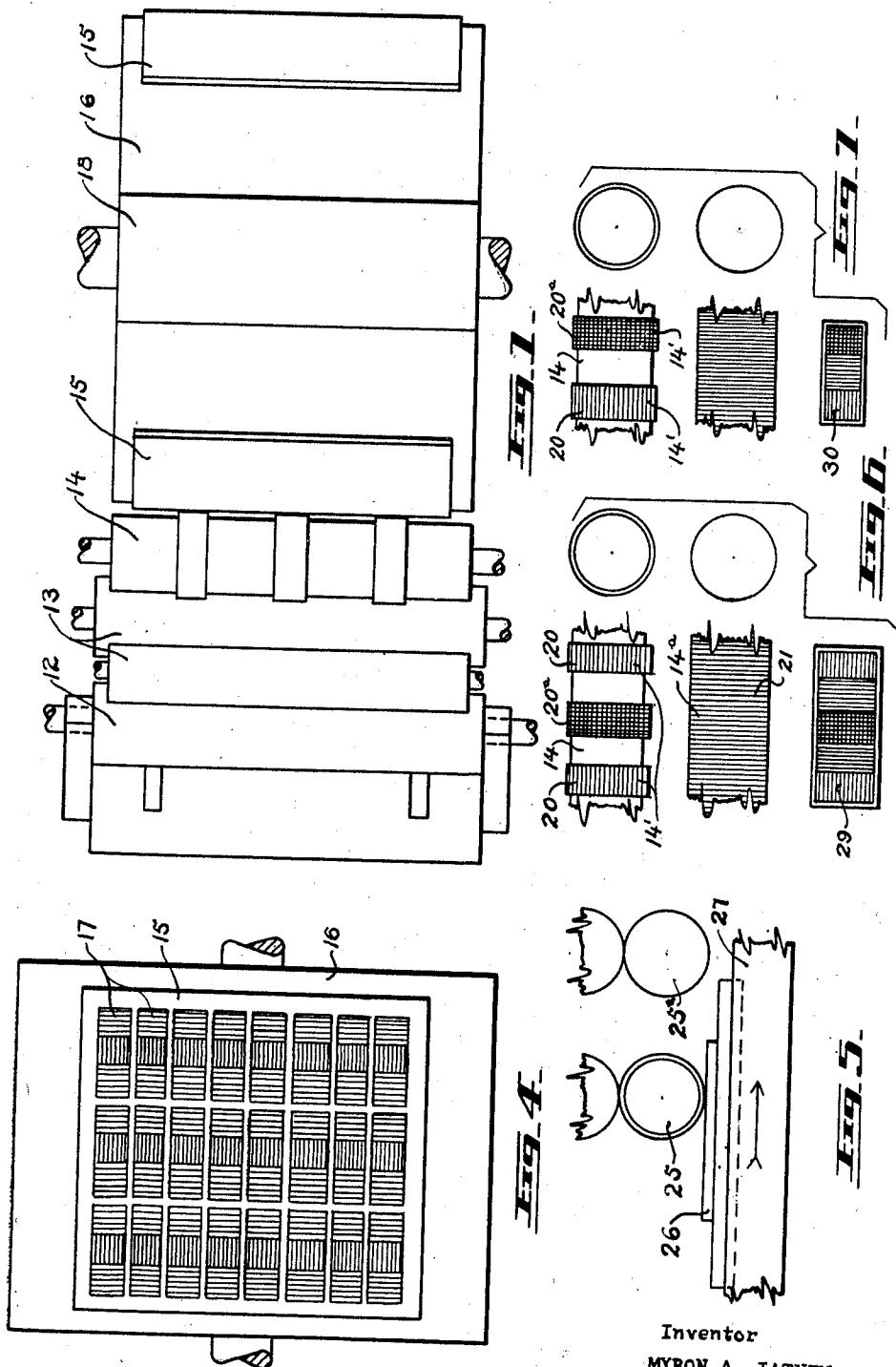
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2,275,062

PLATE PRINTING

Filed March 19, 1941

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

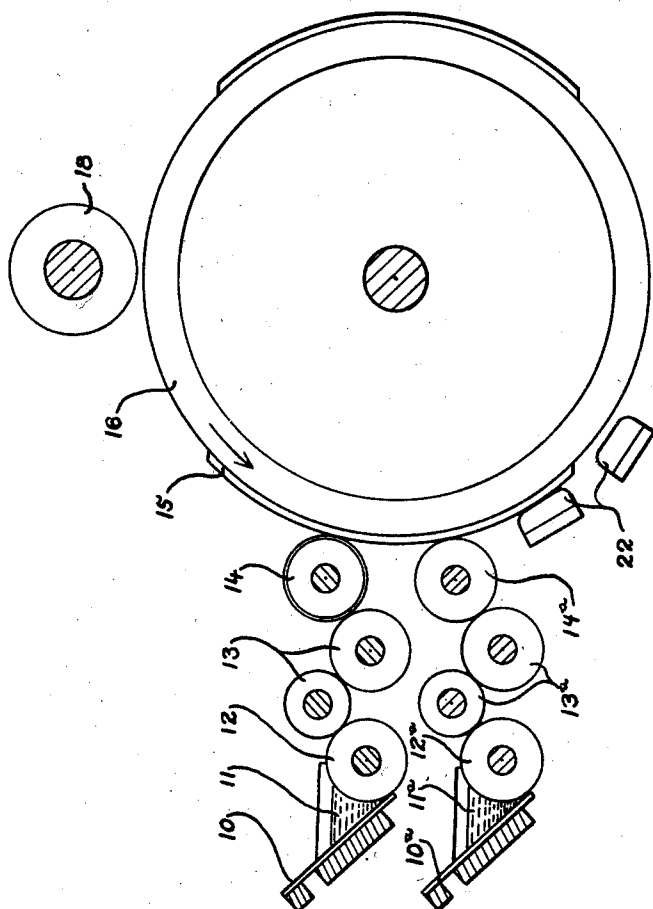


Fig. 2

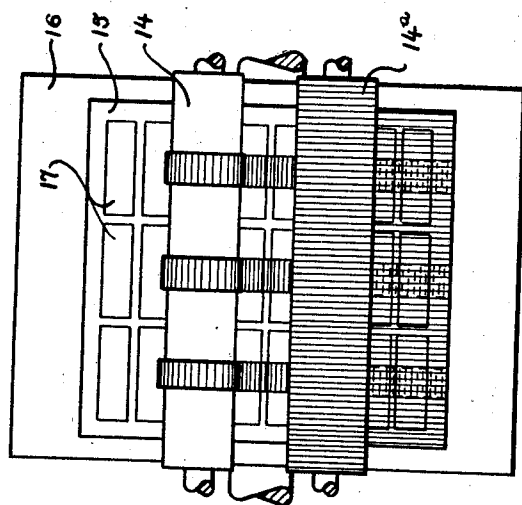


Fig. 3

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UNITED STATES PATENT OFFICE

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PLATE PRINTING

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3 Claims. (Cl. 101—170)

My present invention relates to improvements in plate-printing and appertains particularly to the inking of an intaglio, etched, engraved or other undersurface printing plate.

An object of the invention is to provide an improved method of and means for multicolor printing from undersurface printing plates.

A further object of the invention is the provision of a method and means for printing from undersurface printing plates in two or more colors at one and the same operation.

A still further object of the invention is the provision of a method of and means for printing from undersurface printing plates in two or more colors, wherein a second color or second application of a colored ink or inks is superimposed on the plate directly over the initially laid color or colors to enter the cuts or depressions in the plate not already filled by the first laid color or colors.

A still further object of the invention is the provision of a method of and means for printing from undersurface printing plates in two or more colors wherein a first color or colors are laid in stripes on the plate by banded rollers and another color applied to the plates to overlie the first applied bands of color or colors and fill all the cuts or depressions in the plate not already filled by the first laid color or colors and thereby provide substantially perfect meeting lines for the respective band of colors.

A still further object of the invention is the provision of a method of and means for printing bank notes and the like from undersurface printing plates, wherein a multiplicity of forms is reproduced on a single plate and wherein vertical, horizontal, or other bands or stripes of distinctive colors are desired to be laid for underlying tints, involving the laying of one or more spaced bands of ink of the same or different colors onto the plates and subsequently superimposing another color or colors of ink to the cuts or depressions not already filled by the first bands of colors and subsequently wiping and polishing the plates to remove all the surface ink whereby an impression may be made in multiple color, with substantially true and perfect matching of the several colors, at one and the same operation.

A still further object of the invention is the provision of a method of and means for printing from undersurface printing plates on either rotary or flat bed presses, in multiple color at one and the same operation by the superimposing of a second layer of ink over initially laid stripes

or areas of color to obtain new artistic designs, that is simpler, more accurate and faster than known methods and provides a new field of artistic layouts with a minimum of unwanted blending.

To the accomplishment of these and related objects as shall become apparent as the description proceeds, the invention resides in the construction, combination and arrangement of parts as shall be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the claims hereunto appended.

The invention will be best understood and can be more clearly described when reference is had to the drawings forming a part of this disclosure, wherein like characters indicate like parts throughout the several views.

In the drawings:

Figure 1 is a plan view of a rotary press embodying my invention;

Figure 2 is a side elevation thereof, partly shown in section;

Figure 3 is a front elevation of the inking rollers and plate carrying cylinder;

Figure 4 is a corresponding elevation of one of the plates on the cylinder after inking, wiping and polishing;

Figure 5 is the adaptation of same invention to a flat bed press; and

Figures 6 and 7 diagrammatically illustrate further modified coloring schemes.

My invention concerns the making of an imprint from an engraved or other intaglio or undersurface printing plate in a plurality of colors at the one time by making various lines on a print, such as a bank note, in a plurality of colors which is not possible to do by customary practice of printing each color separately and making a separate impression with each color. When close registration of intaglio printing is done, it has been customary to make two or more printings at different operations but it has not heretofore been practical to make the various lines continuous or in absolutely perfect registry when portions of these lines are printed at different operations in different colors.

Methods of undersurface printing different portions of an engraved plate in different colors have been tried by making the contours of each inking roller to correspond with the portions of the design printed in a given color and these rollers caused to "spot" or deposit their respective colors on the plate but this is practical only in large plates or where the portions printed in different colors are more or less separated.

Moreover, it would be very difficult if not impossible in printing bank notes to make an inking roller so the same design in each color would be transferred truly to each small unit on the plate.

In my invention, perfect registry of the inking portions of inking rollers is not needed since the color applied by the second roller can extend completely over the areas of the plate already inked in one or more colors by the first roller. This process, furthermore, avoids most of the blending that usually occurs between different colors and provides as nearly as possible perfectly registering lines between the colors. While this invention is particularly designed with a view to printing tint colors for the background of bank notes and the like, for which it is especially valuable, in that it will greatly improve their artistic appearance and render their counterfeiting more difficult, it is likewise adaptable to a wide range of uses, particularly those wherein a large number of engraved units are transferred to one plate as the usual difficulty of securing true registry of multiple colors is avoided.

In order not to unnecessarily lengthen the specification and increase the number of drawings, only such parts of the apparatus have been shown and will be described in detail as are necessary to clearly disclose and permit an adequate understanding of the invention by those skilled in the art, and other features of the machine will only be referred to and described in general.

In the usual ink fountains 10, 10a, I provide colored inks 11, 11a or if desired these fountains may be divided with the usual partitions (not shown) in everyday use and thus two or more different colors laterally placed, may be used in one fountain.

The first fountain 10 supplies the usual roller 12 and through a train of distributing rollers 13 inks the inking roller 14 that deposits its ink on the engraved plate 15 on the cylinder 16. To apply a continuous stripe of color from the fountain 10 to the plate 15, this inking roller is provided with a band 14' and only this band is inked. When a number of units are set up in the plate 15, as the twenty-four such units 17 shown in Figures 3 and 4, these units being set in three rows, consequently require three bands 14' properly placed on the roller 14.

The ink from the fountain 10a is supplied to the plate through the roller 12a, distributing rollers 13a and an inking roller 14a. As shown, this inking roller 14a may be continuous the full width of the plate, though if the saving of ink were a factor, it could be cut away near where it registers with the bands laid down by the first roller or dividers could be used in the ink fountain but in any case it is desired that the inking by the second inking roller 14a should overlap the inking by the first roller 14 to insure a true and unbroken joining line.

As the cylinder 16 revolves in the direction indicated by the arrow the plate 15 with its twenty-four units 17 is first inked with the spaced bands (of say, blue color ink) 20, indicated by horizontal lines, that run down the center of each

of the units on the plate, and then this inking is overrun by the second inking roller 14a that applies its colored ink (say, red) over the whole area 21, indicated by the vertical lines.

This second inking, however, does not enter the etched lines in the plate first filled with the ink bands 20, so when the wiping and polishing is done by the usual mechanism indicated generally at 22, the overlying second application of ink is completely removed and clearly marked and well defined color areas remain, as shown in Figure 4, so that a true impression is taken on a sheet of paper fed onto plate 15 and run under impression rollers 18.

In Figure 5, the adaptation of the invention to a flat-bed press is shown. The first and second inking rollers 25 and 25a depositing successively on the plate 26 on the press 27.

A three color lay-out is shown in Figure 6, the first roller 14 being inked with two colors, spaced bands of say, blue 20, shown in horizontal lines, and a central band say of yellow 20a, shown in criss-cross and the second roller 14a filling say red 21 between the central yellow band 20a and the two outer bands of blue 20, giving a note 29 of five balanced vertical stripes of color, blue, yellow, red, yellow and blue respectively. In the simplified design shown in Figure 7, the first inking roller 14 carries a spaced pair of raised bands 14' for each row of units transferred on the plate; one depositing, say, a blue stripe 20 and the other, say, a yellow stripe 20a, while the second roller 14a again spreads, say, red ink 21 over the whole plate, resulting in a note 30 having three vertical color stripes of blue, red and yellow, respectively.

From the foregoing description taken in connection with the accompanying drawings, it will be manifest that an improvement in plate printing in multicolor at one operation is provided that will fulfill all the necessary requirements of such a device, but as many changes could be made in the above description and many apparently widely different embodiments of the invention may be constructed within the scope of the appended claims, without departing from the spirit or scope thereof, it is intended that all matters contained in the foregoing shall be interpreted as illustrative and not in a limitative or restrictive sense.

Having thus described the invention, what I claim is:

1. In multicolor undersurface plate printing, the method of applying one color ink to the plate and then applying a second color ink to the plate, to at least partly overlie the first, and wiping and polishing in the usual way.

2. In multicolor undersurface plate printing, the improved method of inking the plate which consists in first applying one or more color inks in spaced areas and then superimposing a second inking over the first and removing the surface ink.

3. For undersurface printing from plates in more than one color, the hereindisclosed process of superimposing a second color ink over and about the first.

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