

Jan. 5, 1926.

1,568,651

R. BRYSON
COLOR PRINTING DEVICE
Filed April 17, 1925

Fig. 1.

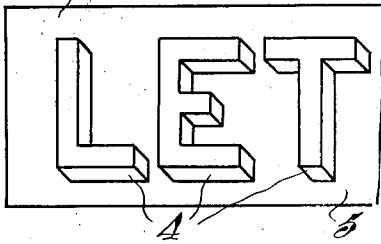


Fig. 2.

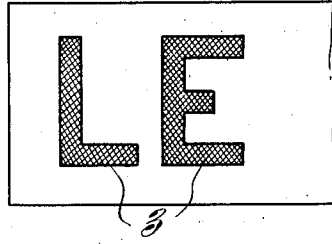


Fig. 3.

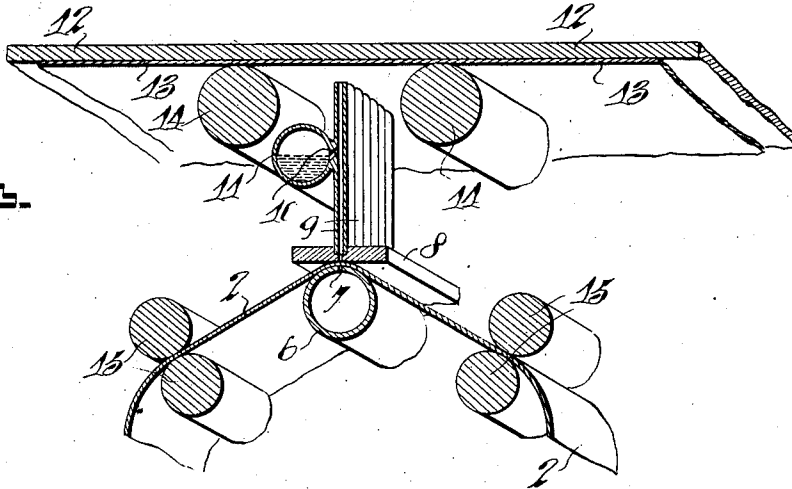
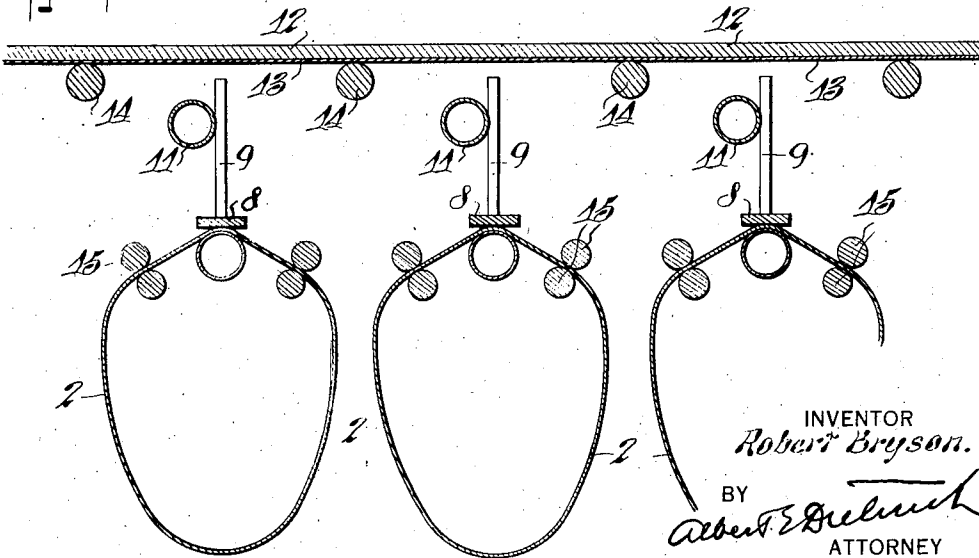


Fig. 4.



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UNITED STATES PATENT OFFICE.

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COLOR-PRINTING DEVICE.

Application filed April 17, 1925. Serial No. 23,922.

To all whom it may concern:

Be it known that I, ROBERT BRYSON, a citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Color-Printing Devices, of which the following is a specification.

This invention relates to a means for reproducing posters or the like from a copy, by a method that will enable them to be rapidly produced in quantity and in any desired color or combination of colors. The object of the invention is to enable the different colors to be applied consecutively to the poster paper during continuous passage of the paper through the machine, instead of, as at present, passing the poster separately through the machine to apply each color.

This result is attained by moving the poster paper at a uniform speed over lines of capillary tubes which are transversely disposed across the path of movement of the paper, and through each separate line of tubes a different liquid color is air-sprayed on the paper as it passes.

The control of the spray for each line of tubes is effected by a gauze screen moving at a speed corresponding with that of the paper under the lower end of the capillary tubes and over the slit of an air supply pipe which registers with the tubes. The interstices of the gauze are filled with paint where the color is not required. This filling, therefore, cuts off the passage of air from the air pipe to the spraying tubes where it is not required, and the air passing through the gauze where it is not painted sprays the color where required.

The invention is fully described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Fig. 1 represents the letters of a poster it is desired to reproduce.

Fig. 2 shows the gauze screen treated with the filling paint.

Fig. 3 shows in vertical section and perspective the means for controlling the air spray of color to the poster, and

Fig. 4 shows to a smaller scale the spraying device to apply several colors.

Over the sample poster which it is desired to reproduce a screen 2 of fine wire gauze is placed and a filling paint is applied to

such parts of the gauze screen as it is not desired to apply a certain color to the poster.

In the case illustrated, the letter L forms a part of the poster: That portion 3, which shows the shape of the letter, is to be, say in red, with the shadow 4 in black or grey and the background 5 in blue. The first screen will, therefore, have the filling paint applied to all the background 5 and the shadows 4, leaving the gauze exposed only in the area 3 of the letter.

Another sheet of gauze will be similarly placed on the sample and the areas 5 of the background and 3 of the letter will have the filling paint applied, so that only the areas 4 of the shadow will have the gauze exposed. A third frame will have the letters 3 and shadows 4 painted with the filling paint and the background 5 will have the gauze exposed.

These gauze frames 2 are movable over the air pipe 6 which is finely slit, as at 7, along the line of contact with the gauze and is lightly held in contact against a transverse sealing plate 8, which plate has a series of fine apertures close together immediately over and registering with the slit 7.

In each aperture of the sealing plate 8 is secured a capillary tube 9 and above the plate each tube is connected to a transverse color tube 11 by a fine duct 10 which is preferably inclined toward the upper end of the capillary tube. Liquid color is maintained in the tube 11 at a substantially constant level approximately that of the aperture 10.

The capillary tubes 9 terminate uniformly at a short distance above their connection to the color tube 11, and a short distance above the upper ends of these tubes a plate 12 is supported against which the paper 13 of the poster is held by rollers 14. The distance between the upper ends of the ducts 9 and the surface of the paper 13 is such as will enable the diverging spray of color from the several tubes to merge and apply the color uniformly.

If the screen 2 and the poster paper 13 are moved in the same direction at a uniform speed, say in the direction of the arrow, the air under pressure will pass from the slit 7 of the air pipe through those portions of the gauze which have not been filled with paint and directly into and through the capillary tubes 9. As it passes through these tubes a flow of the liquid color from the tube 11 is

induced through the duct 10 and is sprayed from the upper ends of the capillary tubes on the surface of the paper 13. The color is thereby applied to the paper to correspond with the unpainted portion of the gauze screen 2. Where the paint is applied the air cannot obtain access from the slit 7 to the capillary tubes 9 and no color can be sprayed on the paper through those tubes which are cut off from the air supply.

This, as so far described, constitutes the essential feature of the invention.

After applying one color through the screen prepared for that color, the paper moves over another set of capillary tubes similarly connected to an air and liquid color service having another color and controlled by another screen prepared for that color, and so successively until all the desired colors or combinations of color are applied in what amounts to one continuous operation.

As the screens 2, by which the application of the different colors is controlled, cannot successively pass over the several air pipes 6 by which the color is sprayed on the poster paper, without inordinately extending the length of the machine, each screen for each separate color may be diverted around its air pipe 6 to pass over its slit 7, by live feed rollers 15 located in pairs on each side of the air pipe and below its upper surface, so that as the poster paper 13 is moved along against the platen 12 over the upper end of the several series of capillary tubes 9, the several colors are successively sprayed on the paper. The feed rollers 14 of the paper and those 15 of the screens 2 may be driven at the same surface speed and by the same mechanism.

I do not, however, desire to be confined to the particular arrangement of the air and color service as described and illustrated, or to any particular method for driving the control screens 2 and the poster paper 13, but desire to be protected broadly in the method of reproducing a poster by the partially obstructed gauze screens, as a means for controlling the passage of the air by which the color is sprayed on the paper.

Obviously, the size of the posters may be increased from the size of the original by spreading apart the upper ends of the capillary tubes 9 any amount within the range of the width of the spray they will deliver from their upper ends, in which case the rate of travel of the paper 13 will require to be proportionately increased from that of the screens 2.

Although the foregoing description has set forth the application of the device to a simple lettered poster, it must be distinctly understood that the same method is applicable to picture posters of the most elaborate character in drawing and coloring as the

machine may apply any desired number of separate colors and these separate colors may be superposed to obtain secondary colors and gradations of colors if the screens are blocked out to apply these colors as required to correspond with the copy.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. A means for reproducing colored posters or the like, said means comprising a screen of permeable material such as gauze, the interstices of which gauze have been rendered impermeable to air in parts, and means whereby the air permeable portions of the screen may be applied to control air sprays of liquid color on the surface of the poster paper.

2. A means for reproducing colored posters or the like, said means comprising a series of screens of permeable material such as gauze, each screen having been rendered impermeable to air in parts where a desired color is not to be applied to the poster, and means whereby the several screens are applied to control the delivery of air sprays of different liquid color successively to the surface of the poster paper.

3. A means for reproducing colored posters or the like, said means comprising the combination with a pipe to which air under pressure is delivered, said pipe having a lengthwise slit, a line of color spraying ducts disposed with their ends along the slit of the air pipe but spaced a short distance therefrom, each duct connected intermediate its ends with a supply of liquid color, a screen of permeable material such as gauze representing the poster it is desired to reproduce, the interstices of which screen are sealed except where a desired color is to be applied to the poster, means for moving this screen across the slit of the air pipe and between it and the line of ducts, and means for simultaneously moving the sheet of material to which the color is to be applied across the upper ends of the ducts and a short distance therefrom whereby the air where it can pass through the screen from the slit of the air pipe will induce a flow of liquid color and spray it from the ducts on the sheet of material as it moves past.

4. Means for spraying color in a desired pattern on a surface, said means comprising the combination with a line of fine spraying ducts each connected with a common source of liquid color, a pipe to which air under pressure is delivered, said pipe having a lengthwise slit immediately opposite the line of spraying ducts and a short distance therefrom, a screen of gauze or the like air-permeable material corresponding to the area over which the color is to be sprayed, the

gauze of said screen being filled with an impermeable material where the pattern does not require the color to be applied, means for moving the screen across the slit of the air pipe, and means for simultaneously moving the area to which the color is to be applied across the ends of the spraying ducts.

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10 5. Means for reproducing colored posters or the like, said means comprising a series of screens of air-permeable material such as gauze, each screen having been rendered impermeable to air in parts where a certain color is not to be applied to the poster, a series of air pipes, each having a lengthwise

slit and supplied with air under pressure, a line of spraying ducts extending along the slit of each air pipe at a distance therefrom sufficient to permit passage of the screen between them, each duct being in communication with a supply of liquid color, means for moving the screens across the slits of the several air pipes, and means for simultaneously moving the material on which the color is to be sprayed across the ends of the spraying ducts, and a short distance there- 25.
above.

In testimony whereof I affix my signature.

ROBERT BRYSON.