E. B. BREWSTER.

METHOD AND MEANS FOR COLORING PAPER.

APPLICATION FILED MAR. 13, 1920.

1,407,247. Patented Feb. 21, 1922.

Fig. 1.

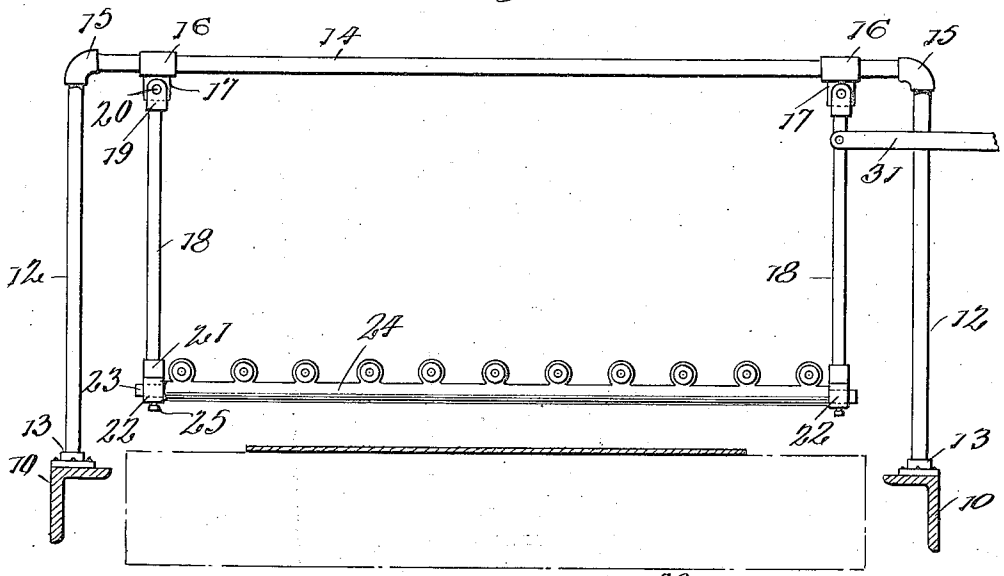


Fig. 2.

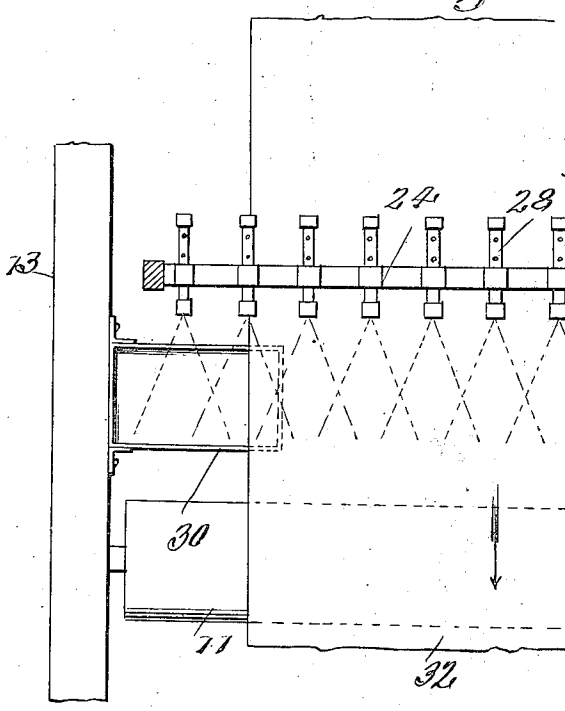
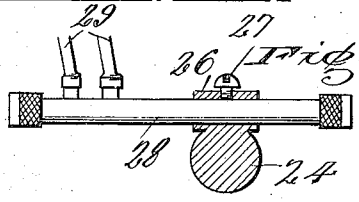


Fig. 3.



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METHOD AND MEANS FOR COLORING PAPER.

1,407,247. Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed March 13, 1920. Serial No. 365,561.

To all whom it may concern:

Be it known that I, ERNEST B. BREWSTER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Methods and Means for Coloring Paper, of which the following is a specification.

This invention has relation to a machine and method for coloring paper, and has for an object to provide a device whereby paper may be colored during the process of manufacture, the color being applied to the pulp before the same has been pressed.

Another object of the invention is to provide a machine for coloring paper including means for supporting the same in combination with a paper making machine, and means for supporting a plurality of air brushes whereby color may be sprayed upon the paper during the process of manufacture thereof.

In addition to the foregoing this invention comprehends improvements and arrangements of parts to be hereinafter described and particularly set forth in the appended claims.

In the accompanying drawings in which similar and corresponding parts are designated by the same characters of reference throughout the several views in which they appear.

Figure 1 is a view in transverse section taken through the frame of the paper making machine illustrating the application thereto of my invention.

Figure 2 is a fragmentary view in plan of the machine, and

Figure 3 is a transverse section showing in detail the manner of mounting the air brush.

With reference to the drawings, 10 indicates the longitudinal frame members of a paper making machine and 11 a supporting roller setting transversely thereof and mounted for rotation. A frame-work forming part of my invention is provided consisting of a pair of upright members 12, one mounted on each of the frame members 10, preferably through the medium of flange couplings 13. The members 12 may be of tubing if desired. An upper transverse member 14 is provided supported upon the upper ends of the members 12 through the medium of elbow couplings 15. Mounted upon the member 14 is a pair of collars 16, one at each end of the member 14 each collar carrying a descending ear 17. Depending from each member 17 is an arm 18 having a coupling 19 secured to its upper end which is perforated to receive a bolt or the like 20 passing therethrough and entering the member 17 to pivotally support said member 18 for oscillation in its transverse direction. Each member 18 carries at its lower end a coupling 21 which is formed with a transversely apertured sleeve 22. Said sleeve supports the reduced end 23 of a transversely extending bar 24. Set screws 25 passing through the sleeve 22 act to retain the bar 24 in any adjusted position. The bar 24 is formed with a plurality of sleeves 26 each being apertured to receive the set screw 27, whereby said set screw may act to hold in place an air brush 28 introduced into the sleeve 26. These air brushes are of conventional type. The color and compressed air are introduced into the brushes through the tubular connections 29. Mounted on each frame member 10 is a receptacle 30 for the purpose of collecting excess color which is not received upon the paper. A link 31 is pivotally connected to one of the members 18 and is adapted to be oscillated by any suitable means such as a crank and pitman.

In operation the pulp is usually spread upon a screen, the pulp covered screen being indicated at 32. As the screen carrying the pulp travels longitudinally in the machine and over the roller 11, the air brushes 28 spray the color upon the paper, and to insure a uniform field of color upon the pulp the bar 24 is oscillated longitudinally, the same being supported upon the members 18 which are pivotally mounted upon the bolt 20. If the field of color is to be light, or if the pulp is to be merely tinted the bar 24 is rocked so as to dispose the brushes horizontally or to direct the spray upwardly. However, if you desire to apply a heavy and uniform color to the pulp the brushes 28 are directed downwardly by rotating the bar 24. Any tint may be obtained by adjusting the bar 24. A different effect may be obtained by reducing the air pressure on the brushes so that the spray leaves the brush in the form of a spatter or small drops. Another effect can be obtained by spraying or moistening plain paper with alcohol, water or other liquid to produce a roughened or blistered surface, the raised portion of the paper receiving the color on one side only.

Rainbow effects can likewise be produced by spraying different colors through the different brushes. Coated paper may be sprayed or spattered with suitable liquid producing a marble effect. My invention may be utilized in another way, namely; paper, already made may be passed under the brushes which may be charged with any suitable liquid which, issuing from the brushes spatters upon the paper causing it to swell or blister and thereby produce an embossed effect. This embossed paper is then passed again under the sprays or which are charged with color this time and directed upon the surface at an angle so as to produce a shaded effect upon the raised portions of the paper. Also, the paper may be passed through a machine having a "dandy roll" which is a roller having an engraved or indented surface to produce, by pressure an embossed effect upon the paper. By passing the paper embossed in this manner through my machine so that the color is directed upon the surface at an acute angle thereto a shaded effect is obtained. The effects may be varied in a great variety of ways, as by changing the pattern on the "dandy roll", by varying the air pressure in the brushes, by varying the rate of flow of color to the brushes, or by changing the angle of the brushes relative to the paper. Attention is called to the fact that while the primary object of the invention is to color paper while the same is still in the form of pulp, nevertheless it finds equally important and valued use when used upon finished paper.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the arrangement of the correlated parts without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure what is described by United States Letters Patent is:—

1. In combination with a paper making machine including the frame and screen for supporting the pulp, a frame work, mounted upon the paper making machine frame, depending arms mounted on said frame work, a bar carried by the lower end of said arms, said bar extending in a direction at right angles to the direction of movement of the screen, means mounting said bar to permit rotatable adjustment thereof axially, and a plurality of air brushes mounted on the bar and lying in a direction parallel to the direction of travel of the screen.

2. In combination with a paper making machine including the frame and screen for supporting the pulp, a support mounted over the screen for rotation in a plane at right-angles to the plane of the screen, a plurality of air brushes carried by the support to spray upon the screen, said support when rotated varying the angle between the plane of the screen and the direction of discharge of the spray, and means for oscillating the support in a direction transversely to the direction of movement of the screen.

3. In combination with a paper making machine including the frame and screen for supporting the pulp, a supporting means mounted on the frame, a pair of bars depending from the support for oscillation in a direction at right angles to the plane of movement of the screen, a bar supported at its ends upon the lower ends of the first mentioned bars, the last mentioned bar being rotatable in a plane at right angles to the plane of movement of the first mentioned bars and to the plane of movement of the screen, a plurality of air brushes carried by the last mentioned bar and located substantially parallel to the direction of movement of the screen, and means for oscillating the last mentioned bar.

4. In combination with a paper making machine including the frame and screen for supporting the pulp, a bar extending transversely of the screen and mounted for movement in the direction of its longitudinal axis and carrying a plurality of air brushes located to direct their spray in a direction substantially parallel to the direction of movement of the screen, means for oscillating said bar, and a pair of receptacles mounted on the frame one at each side of the screen to receive the spray of the end brushes when the latter are moved beyond the edges of the screen.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST B. BREWSTER. [L. S.]

Witnesses:
CHAS. W. RIDER,
CHARLES F. HEAPHY.