

June 23, 1925.

E. POHL

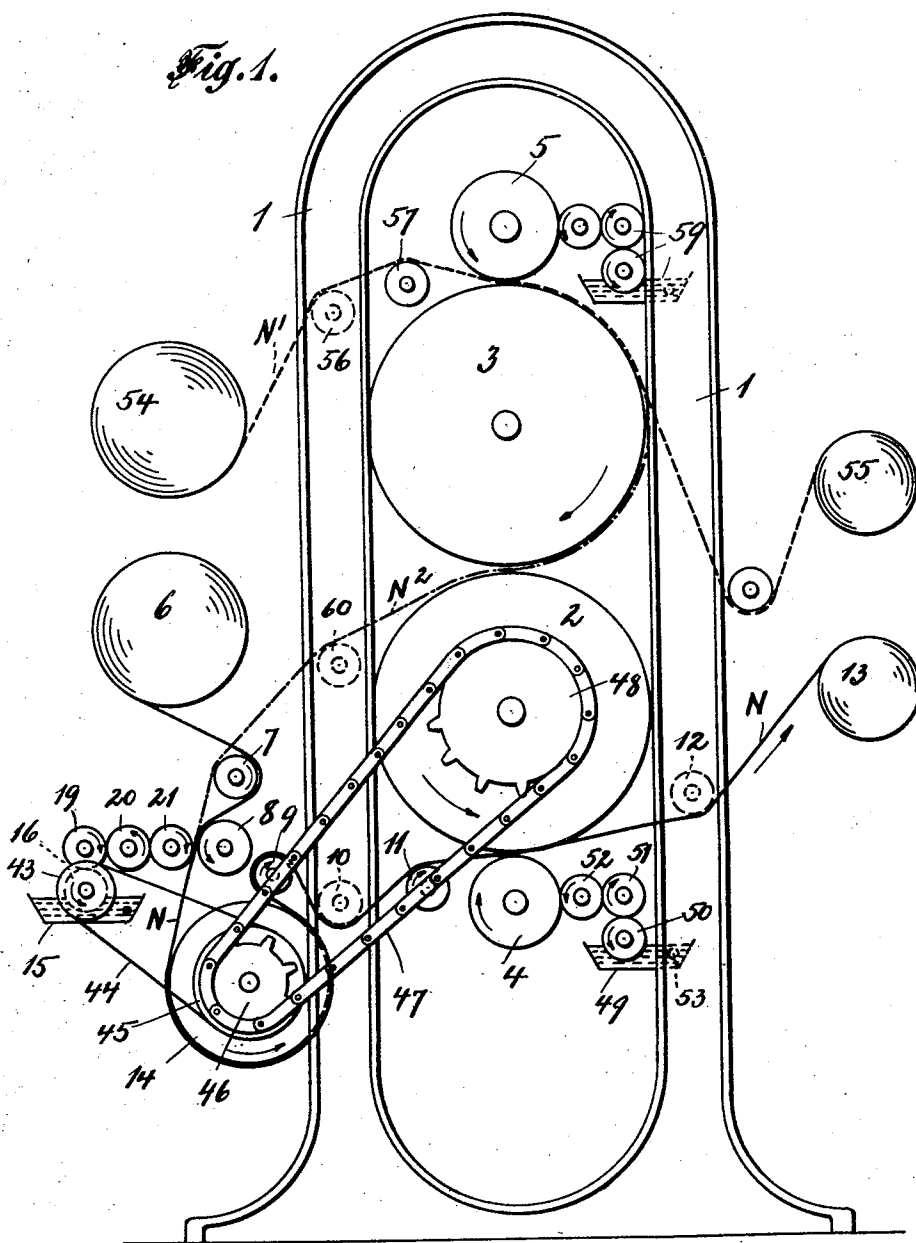
1,542,835

MACHINE FOR COATING, COLORING, OR OTHERWISE TREATING PAPER

Filed April 26, 1924

2 Sheets-Sheet 1

Fig. 1.



INVENTOR
Emil Pohl,
BY *Arthur H. H. H.*
ATTORNEY

June 23, 1925.

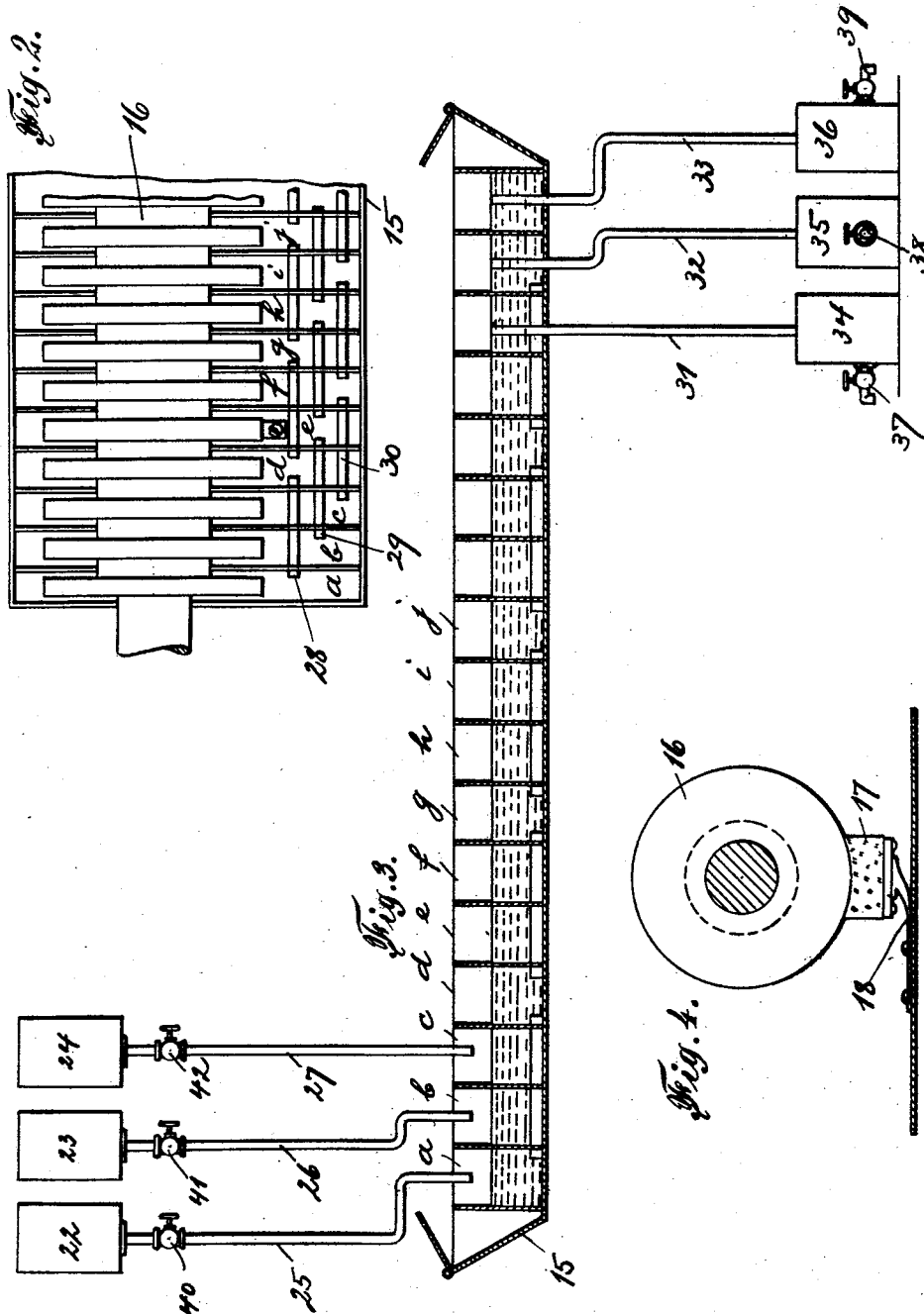
1,542,835

E. POHL

MACHINE FOR COATING, COLORING, OR OTHERWISE TREATING PAPER

Filed April 26, 1924

2 Sheets-Sheet 2



INVENTOR
Emil Pohl
BY *Alfred [Signature]*
ATTORNEY

Patented June 23, 1925.

1,542,835

UNITED STATES PATENT OFFICE.

EMIL POHL, OF AUSTIN, PENNSYLVANIA.

MACHINE FOR COATING, COLORING, OR OTHERWISE TREATING PAPER.

Application filed April 28, 1924. Serial No. 709,076.

To all whom it may concern:

Be it known that I, EMIL POHL, a citizen of the United States, residing at Austin, in the county of Potter and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Coating, Coloring, or Otherwise Treating Paper, of which the following is a specification.

My invention relates to machines for coating, coloring or otherwise treating paper and similar material, and the particular object of my invention is to provide means, whereby various substances or colors can be applied to the material treated in one operation. In the case of coloring paper, the colors may be so applied that at their line of contact they will to some extent mix so as to produce a composite color or a rainbow effect. For a full understanding of my invention, I refer to the annexed drawing in which I have shown by way of illustration in a diagrammatic way one embodiment of my invention, Fig. 1 being a side elevation of the apparatus, showing the relative position of the various parts entering into the construction of a machine, Fig. 2 is a plan view on an enlarged scale of the trough containing the colors or other substances to be applied to the material to be treated; Fig. 3 is a sectional view of the trough to show the method of filling the same with various colors; Fig. 4 is a detail view showing a color applying roll with a pad bearing against the same.

The machine as shown in Fig. 1 comprises a cast-iron frame 1 wherein are rotatably journaled two large rollers 2 and 3 adapted to rotate in the directions indicated by the arrows. With each of these rollers co-operates a smaller roller 4 and 5 respectively also rotatably journaled in movable bearings (not shown) allowing the said smaller rollers to be moved with any desired pressure against their corresponding larger roller. The web of paper or other material to be treated is wound on a reel 6 and is conducted therefrom over the guide rolls 7, 8, 9, 10, 11 and under 12 to a reel 13 on which the treated or colored paper, or other material is wound. Between the guide rolls 8 and 9 is interposed a drying drum 14 around which the web of material is conducted on its way to the rollers 4 and 5.

The device for applying the treating substance, such as color, to the paper, comprises a trough 15 of a length corresponding to

the length of the rollers 2 and 4, which trough, according to the number of colors to be applied to the web of paper, or other material, is divided into a corresponding number of compartments *a, b, c, d, e, f, g, h, i, j*, etc., as shown in Fig. 2. In the trough 15, in bearings not shown, is rotatably journaled a roller 16 provided with projecting circular disks of a width corresponding to the width of the said compartments, and arranged to dip into the color contained in the said compartments. In each of the said compartments is preferably provided a block 17 of felt or any other suitable material immersed in the color and in such a position relative to the said disks as to continuously apply thereto the required amount of color (see Fig. 4). The blocks 17 are held by resilient arms 18 removably secured to the bottom of the trough 15. From the disks on roller 16 the colors are transmitted to the web of paper N, or other material, by means of rotatable plain rollers 19, 20 and 21, rotating in the direction shown by the arrows. On these rollers, 19, 20 and 21, the colors will spread so as to mix at their lines of contact, and in this manner, composite colors are obtained. For instance, if the compartments formed in the trough 15 successively contain red, yellow and blue, which succession of colors is continuously repeated, then red and yellow in being mixed on the above said transmitting rollers will produce orange, yellow and blue will produce green and blue and red will produce purple, so that the colors when applied to the web of paper N, or other material, will appear as red, orange, yellow, green, blue, purple, after which again comes red, etc. In this way any desired color effects can be obtained. Where, on the other hand, distinct stripes of colors shall be transmitted, then the transmitting rollers 19, 20 and 21 instead of being plain rollers are made like rollers 16, i. e. with disks of the same width as the disks projecting from roller 16. Instead of the compartments of trough 15 being filled with various colors, they can, of course, be filled also with one color only, and in that case, stripes of the same color will appear on the web of paper N, or other material, when the color is transmitted in the manner last described.

In Fig. 3 is shown the arrangement for filling the various compartments in the trough with the various colors. The case of

three different colors e. g. red, yellow and blue, such as above described, being assumed, then there will be provided three tanks 22, 23, 24, one containing the red, the next the yellow and the third the blue color. These colors flow through suitable conduits 25, 26, 27 into the first three compartments *a*, *b* and *c*. As shown in Figs. 2 and 3, compartment *a* is connected through a tube 28 with compartment *d*, which is the first compartment of the next series, *b* is connected through a tube 29 with compartment *e*, the second compartment of the next series, while *c* is connected through a tube 30 to compartment *f*, the third compartment of the next series. In the same manner, *d*, *e* and *f* are connected to compartments *g*, *h* and *i* respectively, and so forth, so that the red color, for instance, will flow from compartment *a* into *d*, from *d* into *g* from *g* into *j*, and so forth. Yellow flows from *b* into *e*, from *e* into *h*, and so forth, while blue flows from *c* into *f*, from *f* into *i*, and so forth. In this manner, only one color supply tank is required for each color irrespective of the number of compartments to be filled with the said color. The tubes 28, 29, 30, etc. are arranged at the bottom of the trough 15. For each color, there is also provided at the other end of the trough 15 an overflow to maintain a uniform level. Into the last three compartments there extend tubes 31, 32, 33 up to a height at which the level shall be kept. These tubes lead to tanks 34, 35 and 36, which are each provided with a discharge faucet 37, 38 and 39 respectively, whereas the supply tanks 22, 23, 24 are each provided with a cut-off valve 40, 41 and 42 respectively.

On the end of the roller 16 projecting outside from the trough 15 there is mounted a pulley 43 (Fig. 1) which, by means of a belt 44, is driven by a pulley 45 on the shaft 46, rotatably journaled in bearings not shown, which shaft carries the drying drum 14. On the same shaft is also mounted a sprocket wheel 46, driven by a sprocket chain 47 from the shaft of the roller 2, on which shaft is mounted a sprocket wheel 48. The shaft of the roller 2 is positively driven from a source of power not shown.

In addition to the color applying device, there is shown in Fig. 1 also a coating device for applying melted wax, paraffin, glycerine or the like to the bottom roller 4 when it is desired to give the paper a glazed appearance. The coating device comprises also a trough 49 adapted to contain the coating substance. In this trough there is immersed a rotatable roll 50, which takes up the coating substance and transfers it by means of two other rolls 51 and 52 to the bottom roller 4, whereby it is transmitted to the web of paper *N*, or other material, as it passes under pressure between the rollers 4 and 2.

In the trough 49 is provided a steam pipe

53 to heat the coating substance where it is required.

Besides the reels 6 and 13, there may be provided two other reels 54 and 55. From reel 54 a web of paper, or other material may be conducted over the guide-rolls 56 and 57 between the top roller 5 and roller 3 and then under guide-roll 58 to the reel 55 as shown by the dash-line *N'*, so as to be coated or otherwise treated, a coating device being shown at 59. Or a web of paper, or other material may be passed from reel 54 following the path of web *N'* first between the rollers 5 and 3, then around 3, as shown by the dash and dot line *N''* through the space between 3 and 2 and over the guide-rolls 60 and 7 to the guide-roll 8, then following the path of the web *N*. In this way, a web of paper or other material may be in one operation treated on both sides.

I claim as my invention:

1. In a machine for coloring, coating or otherwise treating paper, or other materials, the combination with a frame, of a large operating roller rotatably journaled therein, a smaller rotatable operating roller adapted to cooperate with the said large roller being pressed against the same, reels for winding and unwinding the web of paper, or other material to be treated, and a color applying device comprising a color trough divided into compartments, a color roller rotatably journaled in said trough and having a plurality of disks corresponding to the number of said compartments, means for rotating said color roller, means cooperating with the said color roller for transmitting the color to the web of paper, or other material to be treated, means establishing communication between each series of compartments containing the same color, and means for supplying color to only one compartment in each series.

2. In a machine for coloring, coating or otherwise treating paper, or other materials, the combination with a frame, of a large operating roller rotatably journaled therein, a smaller rotatable operating roller adapted to cooperate with the said large roller being pressed against the same, reels for winding and unwinding the web of paper, or other material to be treated, and a color applying device comprising a color trough divided into compartments, a color roller rotatably journaled in said trough and having a plurality of disks corresponding to the number of said compartments, means for rotating said color roller, means cooperating with the said color roller for transmitting the color to the web of paper, or other material to be treated, means establishing communication between each series of compartments containing the same color, means for supplying color to only one compartment in each series, and means in

connection with each series of compartments for maintaining therein a constant uniform level.

3. In a machine for coloring, coating or
5 otherwise treating paper, or other materials, the combination with a frame, of a large operating roller rotatably journaled therein, a smaller rotatable operating roller adapted to cooperate with the said large roller being
10 pressed against the same, reels for winding and unwinding the web of paper, or other material to be treated, and a color applying device comprising a color trough divided into compartments, a color roller rotatably
15 journaled in said trough and having a plurality of disks corresponding to the number of said compartments, means for rotating said color roller, means cooperating with the said color roller for transmitting the
20 color to the web of paper, or other material to be treated, and felt blocks disposed in the various compartments so as to constantly apply color to the various disks of the said color roller.

25 4. In a machine for coloring, coating or otherwise treating paper, or other materials, the combination with a frame, of a large operating roller rotatably journaled therein, a smaller rotatable operating roller adapted
30 to cooperate with the said large roller being pressed against the same, reels for winding and unwinding the web of paper, or other material to be treated, and a color applying device comprising a color trough divided
35 into compartments, a color roller rotatably journaled in said trough and having a plu-

rality of disks corresponding to the number of said compartments, means for rotating said color roller, means cooperating with the said color roller for transmitting the
40 color to the web of paper, or other material to be treated, felt blocks disposed in the various compartments so as to constantly apply color to the various disks of the said color roller and resilient means carrying the
45 said felt blocks.

5. In a machine for striping paper or other materials, a color applying device consisting of a trough divided into compartments, a roller having a plurality of disks
50 rotatably journaled in said trough, means connecting a plurality of spaced compartments containing the same color, and a source of supply connected to one of said spaced compartments.

55 6. The combination of a machine for treating paper or other materials of a color applying device consisting of a trough divided into compartments, a color roller having a plurality of disks journaled in said
60 trough for transferring the color material, connections between the various compartments in said trough supplying the same color whereby a source of supply connected to one of said compartments will feed all
65 of said compartments supplying the same color and means for maintaining a constant level in the connected compartments.

In testimony whereof I affix my signature.

EMIL POHL.