(Model.)

W. H. R. TOYE.

Ornamenting Paper and other Material.

No. 238,991. **Patented March 15, 1881.**

FIG. 1.

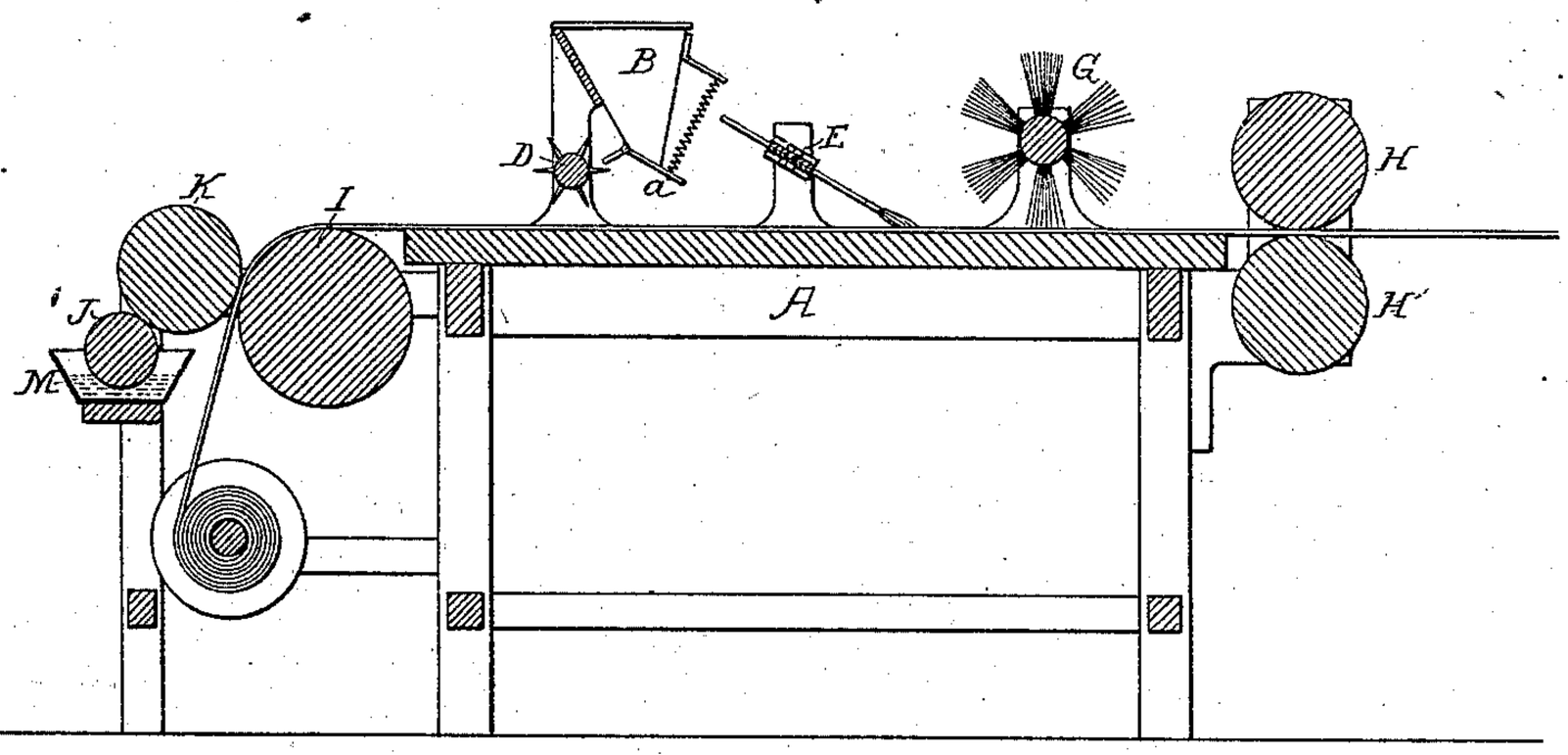


FIG. 2.

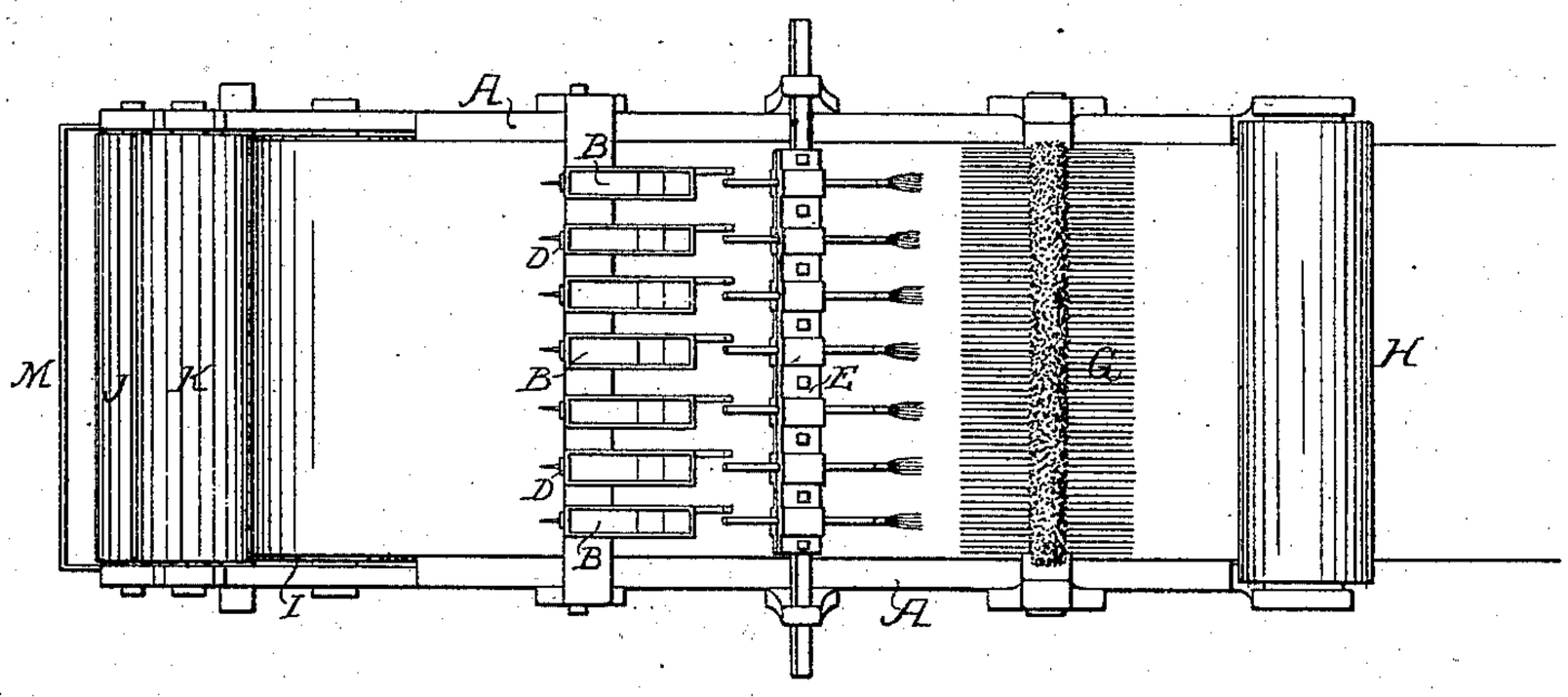
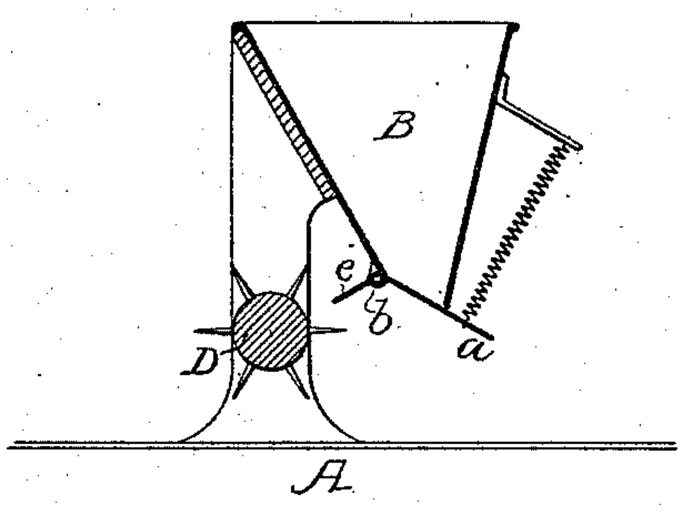


FIG. 3.



WITNESSES.

James F Tobin.

Henry Howson Jr.

INVENTOR.

William H. R. Toye

by his Attorney

Howson & Son

UNITED STATES PATENT OFFICE.

WILLIAM H. R. TOYE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JOSEPH R. SMITH, OF CAMDEN, NEW JERSEY.

ORNAMENTING PAPER AND OTHER MATERIAL.

SPECIFICATION forming part of Letters Patent No. 238,991, dated March 15, 1881.

Application filed September 14, 1880. (Specimens.)

To all whom it may concern:

Be it known that I, WILLIAM H. R. TOYE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented an Improvement in Ornamenting Paper and other Materials, of which the following is a specification.

My invention relates to the ornamentation of the surface of paper and other material; and it consists in first applying to the surface an adhesive substance or composition; second, depositing different colors, in a dry pulverized condition, onto the prepared surface in small masses or heaps, detached or mainly detached from each other; third, distributing and intermixing or partly intermixing the masses, and finally subjecting the surface thus ornamented to pressure.

The invention may be carried into effect by the following manipulations: If paper has to be ornamented, the surface, or a portion of it, is first coated with an adhesive substance, preferably such as is used by printers and others as a medium for causing bronze-powder to adhere to paper, this composition generally consisting of varnish and white lead in equal proportions, by weight. The adhesive medium may, however, be varied without departing from my invention. The sheet of paper having been thus prepared and the dry colors selected, the latter are deposited, in small masses or heaps, at such points as the operator, guided by the character of the ornamentation he may desire to produce and by experience which he has acquired, may suggest. Small heaps of different colors may, for instance, be deposited at frequent intervals, may even be in contact with each other, or may be partly intermixed, or they may be placed at a distance apart from each other, or there may be a larger heap of one color than another—in fact, the disposal of the heaps must be left to the judgment and taste of the operator, and this must also be the case in conducting the third branch of the process, which consists in distributing the heaps of dry colors. This may be accomplished by the aid of a fine brush, which the operator will manipulate in order to produce a mottled surface, a marble-like surface, or a surface of any desired character, the operator becoming expert after a short practice in blending and otherwise disposing of the different colors. After the colors have been distributed over the entire prepared surface such pressure is applied as will cause a proper adhesion of the powder to the cementing medium, the powder being, in a manner, incorporated with the adhesive material, but the colors retaining all their brilliancy, which, indeed, is enhanced by the pressure, as the latter imparts a smooth and even surface. The necessary pressure may be imparted by passing the paper between rolls, that in contact with the powdered surface being smooth; or a block of wood or metal may be placed with its smooth side on the powdered surface and then subjected to the action of a press. By placing smooth paper on the surface and then rubbing the paper with the ball of the hand the desired pressure may be obtained.

It may be remarked here that the colors sold in the stores cannot, in all cases, be used without special preparation and treatment. Finely pulverized Persian red, chrome-yellow, green ultramarine, and ivory-black may be cited as instances of colors which may be used in the condition in which they are purchased; but other colors—such, for instance, as aniline-green, aniline-red, aniline-orange, and other aniline colors—produce imperfect effects when used in their crude pulverized condition; but by mixing them with powdered starch in the proportion determined by the desired tints these and other colors can be used to advantage. As the preparation of colors for practicing my invention will form the subject of separate applications for patents, the above general remarks on the subject will suffice in the present application.

Although I have described my invention as being conducted by hand, a machine will in most cases be used for the purpose, especially if a continuous sheet of paper has to be rapidly decorated.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved decorating-machine; Fig. 2, a plan view of the same, and Fig. 3 an enlarged sectional view of one of the hoppers.

A is a table, to which are connected a series

of hoppers, B, each of the latter being provided in the present instance with an inclined chute, *a*, hinged to the hopper at *b*, a spring tending to maintain the chute in contact with the bottom of the hopper, and to thereby close the outlet of the same. Near the series of hoppers there is a roller, D, journaled to standards on the table, and this roller is provided with a system of pins—one or more—for acting on the arm *e* of the chute of each hopper as the roller revolves.

Different pulverized colors are placed in the hoppers, or there may be similar colors in two or more of the hoppers, or similar colors, but differing in shade. As the roller D revolves the chutes will be suddenly lowered from the bottoms of the hoppers, from which a small quantity of color will pass into the chutes, and when the latter are released there will be a sudden closing of the chutes with a jerk, which results in the depositing of the colors on the prepared paper. It will be understood that the chutes of all the hoppers are not operated simultaneously, the pins being arranged on the roller at such intervals and in such relation to each other as the desired disposal of the colors on the surface of the paper may suggest.

Valves and other devices may be employed in place of the chutes for discharging small quantities of color from the hoppers at intervals, and the valves, or their equivalents, may be operated by hand instead of automatically.

At the rear of the system of hoppers is a bar, E, to which are clamped a series of inclined brushes, the bar being adapted to guides on the table, and being arranged to reciprocate in the said guides, so that the brushes will distribute the heaps of colors laterally as the paper traverses over the table. A rotary brush, G, is adapted to bearings secured to the table, and thus serves to blend the colors distributed laterally by the reciprocating brushes. The paper finally passes between the rollers H H′, by which the desired pressure is imparted to the powdered surface. The desired adhesive medium may be imparted to the paper as it passes over the roller I by a rotary brush or roller, K, which takes the material from a roller, J, the latter revolving in the composition contained in a trough, M.

It has not been deemed necessary to show the mechanism by which the traversing of the paper, the reciprocation of the brushes, and the turning of the rollers D H H′ and rotary brush K are rendered automatic, for the character of the reciprocating movement of the brushes may be varied as the desired ornamentation may suggest. A uniform reciprocating movement may, for instance, be imparted to the rod E and its brushes to produce a particular effect on the ornamentation, and another effect may be produced by imparting a differential movement to the brushes; and when a thorough blending of the colors is not required the rotary brush may be dispensed with.

The surfaces of metal plates and of other materials may be decorated in the manner described; but in the ornamentation of metal objects which have to be subjected to heat, as in the process of japanning, the same kind of adhesive materials and colors must be adopted as in practicing that process.

Fabrics may also be decorated by my process, the usual mordants being employed in connection with colors such as are ordinarily used in calico-printing, the colors, however, being in a dry condition.

Any of the bronze-powders may be used with colors in decorating surfaces according to my invention.

I claim as my invention—

1. The within-described process of decorating the surface of paper and other material, the same consisting in first coating the surface, or part thereof, with an adhesive medium; second, depositing small heaps of different colors on the said prepared surface; third, dispersing, intermixing, or partly intermixing the different heaps, and, fourth, imparting pressure to the powdered surface, all substantially as described.

2. A decorating-machine in which the following elements are combined, namely: first, a table for receiving the paper or other material which has been coated, or partly coated, with adhesive substance; second, a system of hoppers or receptacles for containing the decorating-colors; third, mechanism for discharging portions of the contents of the hoppers onto the prepared material, and, fourth, appliances for distributing the small heaps of color prior to the application of pressure to the powdered surface, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. H. R. TOYE.

Witnesses:
JAMES F. TOBIN,
HARRY SMITH.