No. 644,282. Patented Feb. 27, 1900.

S. CRUMP.

VARNISHED PRINT.

(Application filed Dec. 1, 1899.)

(Specimens.)

Fig. 1

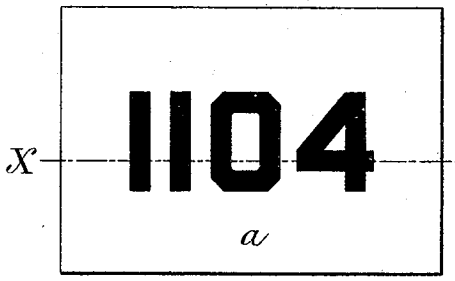


Fig. 2

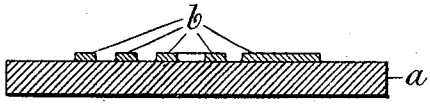


Fig. 3

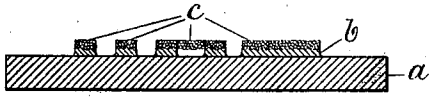
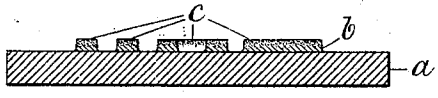


Fig. 4



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UNITED STATES PATENT OFFICE.

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VARNISHED PRINT.

SPECIFICATION forming part of Letters Patent No. 644,282, dated February 27, 1900.

Application filed December 1, 1899. Serial No. 738,849. (Specimens.)

To all whom it may concern:

Be it known that I, SAMUEL CRUMP, a citizen of the United States of America, and a resident of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Varnished Prints, of which the following is a specification.

This invention relates to improvements in prints, lithographs, and other ink or color impressions produced by letter-press, lithographic, transfer, and similar methods, including typographical and ornamental matter, such as may be employed for labels, show-cards, posters, wall-paper, and similar productions, the object of the invention being a production in which the imprinted design is overlaid and protected by a surface coating or veneer of varnish applied locally upon the design only and in perfect register therewith, serving to impart a luster to the print, to dry the print quickly, and to heighten and intensify the color and other effects.

An application for Letters Patent on this invention was filed in Great Britain May 18, 1899.

The prints and similar productions which are the objects of this invention differ from those already known in this art in respect to the nature, structural arrangement, and relation of the ink or pigment and varnish employed to delineate or portray the desired design or picture. The productions resulting from the prior attempts to produce glossy or lustrous prints have been composed chiefly of a deposit, transfer, or impression of varnish-ink, or one which is mixed with oil or a liquid varnish. The composition of this varnish-ink is determined and limited by various considerations and requirements, among which may be mentioned a proper working consistency of the ink, its capacity for distribution by printers' rolls, and the receptivity of the paper or other fabric upon which it is to be impressed. While some degree of luster may be obtained in such a print, it is greatly lessened because of the fact that the oil or varnish ingredient is uniformly mixed with the ink deposit instead of lying upon its surface. In certain classes of work attempts are made to heighten the effect and produce an increased luster by a second impression of the varnish-ink over the first. Among the inherent difficulties in the production of prints by this double impression is that of expense and also that of exactly registering the second impression upon the first, because of the difficulty of twice locating the same sheet of paper in exactly the same relation to the type or stone and because of the shrinking or expanding of the paper due to changes in the humidity of the atmosphere during the interval between the two impressions, this difficulty being increased by the necessity of drying the first coat or impression before applying the second. Therefore this double-impression form or style of print is seldom attempted where the figure or design is intricate or is composed of fine lines, since any imperfection in the registration of the second impression blurs the outlines of the prints and precludes sharpness of definition.

Another form in which the production of glossy or lustrous prints has been attempted consists of a foundation deposit or transfer of ink or pigment in the desired figure or design and of a coating of dissolved varnish applied over the entire surface of the sheet or fabric after the inked or color impression is dry, covering the unprinted as well as the printed portions, and thereby often sacrificing valuable effects of contrast which would be obtained by leaving the background unvarnished, besides stiffening and sometimes curling the print so it will not lie flat.

My improved prints consist of a foundation coating of ink, pigment, or size impressed, transferred, or otherwise deposited upon the paper or other fabric in any of the several well-known ways. This is then covered by a superimposed crust or veneer of varnishing material applied locally to all portions of the design or impression and in exact coincidence therewith, leaving the intervening space or background fresh and clear in its original color and with all of the inherent pliability of the fabric, also leaving the sheets flexible to a considerable degree as compared with the results obtained by applying varnish over their entire surface. The structural formation or composition of these improved prints is illustrated by the accompanying drawings, in which—

Figure 1 represents a plan or face view of

a sheet of paper or other suitable fabric having a series of figures impressed upon it. Figs. 2, 3, and 4 are edge views in section, taken on the line X X of Fig. 1, showing the fabric and its layers of ink and varnishing material in greatly-exaggerated thickness. Fig. 2 represents the fabric with the first or foundation coating of ink or pigment applied. Fig. 3 represents the foregoing, with the addition of a coating of powdered varnishing material; and Fig. 4 represents the approximate relation of the united coatings in the finished article.

The letter *a* in each of the views represents the paper or fabric upon which the print is made.

b indicates the first or foundation layer of ink or pigment, while *c* represents the crust or veneer of varnishing material.

In order that the nature and structural formation of this product may be better understood, I will now briefly describe my preferred process of producing it. The desired design of whatever nature or character is first impressed, transferred, or deposited upon the desired fabric, as in Fig. 2, in any of the usual ways from type, engraving, electrotype, or lithographic stone in any ink, size, or color pigment in a layer represented by *b*. The next step consists in applying a finely-comminuted gum or varnishing material in the form of powder upon the print while the first impression is still wet, so that the powder adheres only to the imprinted design *b*, the superfluous powder being then brushed, shaken, or blown off, the remaining powder (represented by *c*) exactly covering the imprinted portion throughout its entire extent. The next step in the process consists in heating the powder-covered print (represented in Fig. 3) to a temperature sufficient to fuse or dissolve the powdered varnishing material. This may be done by placing the sheets in an oven, or they may be passed directly from a dusting-machine through a suitable fusing-machine at a uniform rate suitable for the fusing operation, during which the powdered varnishing material fuses and flows together, its lower surface becoming intimately incorporated with the original impression *b*, so as to firmly unite the surface stratum, veneer, or crust of varnishing material with the basic layer of ink or size. The extent of this intermixing of the two layers will vary somewhat, depending upon the nature and depths of the deposits and upon the degree of heat applied in the fusing operation. Therefore no definite line of separation is or properly can be shown in Fig. 4. The last step of the process is the chilling of the crust or veneer, which may be done in any suitable way, as by withdrawing the paper from the fusing-machine with or without a fan-blast, and which leaves the surface of the crust or veneer at once dry and lustrous. As soon as the sheets are chilled they may be handled and piled without sticking together and without offsetting the impression, and web material may be rolled, the work being now ready for delivery or for any desired subsequent use. The latter is a feature of great commercial advantage, inasmuch as with all of the known older processes of applying the varnishing material in solution several hours are usually required to dry the prints sufficiently to enable them to be packed or handled without sticking together or slurring the impressions.

The surface crust or veneer of varnishing material may be any of the commercial gums, such as gum-dammar, gum-sandarac, kauri, or any other similar material capable of being applied as dry powder. This may also, if desired, include a suitable proportion of any desired drier—such as litharge, manganese, burnt umber, sugar of lead, or oleate of lead—in comminuted form, so as to still further hasten the drying process. The selection and proportion of these components are determined by their affinities, by the color to be produced, and by the degree of luster desired. Some colors may be wholly obtained by mixing the powdered varnishing material with a dry tint, and in that case the base or first deposit may be composed wholly of a suitable size, which may be colorless.

These prints may be distinguished from those hitherto produced by means of various tests, the selection and application of which will depend upon the nature, color, and other characteristics of the prints to be distinguished. An excellent method of determining their structural formation is by means of transverse sections viewed under a microscope of suitable power. These sections may be prepared for examination in ways analogous to those in which similar sections of vegetable, leaf, and fiber structures are prepared for microscopic examination.

I claim as my invention—

1. A print, lithograph, or similar production, having its design or picture composed of a basic layer of ink or size, and a superimposed crust or veneer of varnishing material coextensive with the basic layer and united therewith.

2. A lustrous print, lithograph or similar production, having a basic color impression and a superimposed crust or veneer of varnishing material coextensive with the color impression and united therewith.

Signed at New York city, New York, this 28th day of November, 1899.

SAMUEL CRUMP.

Witnesses:
EDWIN SEGER,
JOHN O. TEMPLER.