

UNITED STATES PATENT OFFICE.

LOUIS PRANG, OF BOSTON, MASSACHUSETTS.

METHOD OF PRINTING ON TEXTILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 224,949, dated February 24, 1880.

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To all whom it may concern:

Be it known that I, LOUIS PRANG, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in the Method of Printing on Textile Fabrics, the following containing an accurate description thereof.

The art to which this invention is related is that of chromographic printing, and it is especially intended to facilitate the production of colored pictures or designs upon woven materials, the elastic and stretching qualities of which give rise to difficulty in maintaining an accurate register.

In United States Patent No. 113,343, granted to me, a method is described for so treating textile fabrics as to overcome this difficulty. The present invention accomplishes the same end more perfectly and by simpler means, which are at the same time very thoroughly under the workman's control.

To secure the accurate register of two or more colors printed upon fabrics of silk, cotton, flax, or wool, and to accomplish this in such a manner that the material, after having received the several printings, shall not have suffered in appearance or otherwise, I proceed as follows: A sheet of stiff paper (or other non-extensible material) is to be covered on one side with a coating of starch or flour paste, glue, or similar adhesive substance, and dried. In my practice I prefer to use common starch made into a paste with hot water for coating the paper. The silk or other material to be printed upon is next damped evenly and then spread flat in contact with the dried surface upon the paper, and pressure applied in a lithographic or other suitable press, or in any other effective manner. The textile fabric so treated will adhere to the sheet, and the printing can then be proceeded with, as far as the registration is concerned, exactly as in the case of printing colors upon paper alone. It is not necessary for the end in view that the woven stuff should stick strongly to the paper; on the contrary, all that is required is an adhesion strong enough to control the elasticity of the fabric and to keep all parts of it in intimate contact with the paper during the several printings.

The degree of adhesion depends on three

circumstances—viz., the nature of the adhesive paste dried upon the paper, the degree of pressure applied, and, above all, on the amount of moisture in the textile fabric. The first two conditions are easily maintained constant. The last can be varied and graduated with great nicety, (by means well known to practical printers,) and maintained without further change when the desirable degree of adhesion is secured. The control which the workman can thus exert is very important, because of its bearing upon the next operation—namely, the removal of the fabric uninjured from the paper after the printing upon it has been completed. This I accomplish by simply tearing them asunder mechanically.

When, in the manner hereinbefore described, the temporary mounting of the textile material has been properly done, its removal from the paper in this way is easy and certain. The force required will not be sufficient to drag the silk or other cloth out of shape, nor will the adhesion be strong enough to tear off particles of paper or paste on the one hand, or to injure the surface of the textile fabric upon the other. The material will, in fact, be quite unchanged in appearance, except by the colors printed upon it.

If the attempt be made to effect the temporary mounting by damping the pasted surface upon the paper, and then applying the fabric, dry or damp, thereto, it will be unsafe to depend upon mechanical means alone to finally separate them, because the exact tenacity with which they will adhere cannot be controlled and determined beforehand. In such cases a redamping after printing will inevitably be necessary to cause the paste to let go easily and equally. This arises from the fact that it is impossible to provide an adhesive surface upon the paper which will have the same adhesiveness everywhere, or two distinct sheets which will be identical in this respect. Uniformity of this kind depends upon the regular and equal thickness of the coating of adhesive matter and (if it has been dried) upon the time during which it was exposed to the moistening influence. When such damping is effected in the usual way—namely, by placing the sheet to be damped between sheets of moist paper, the quantity of water in which has been

accurately determined by well-known tentative methods—the dry pasted surface continues to absorb water gradually until it has acquired a more or less softened or gelatinous condition throughout its thickness. When such a surface is forcibly brought in contact with that of a textile fabric the softened material is crushed and driven between the fibers, and a very close and firm adhesion at the thickest part of the coating is sure to follow. After such treatment the only way of separating the two is to remoisten the whole and pull them apart; but in so doing, besides the time and trouble it requires, some of the paste or starch always remains attached to the cloth and changes its character by making it stiff and harsh.

In my present invention, hereinbefore described, the very slight amount of moisture retained in the fabric at the time it is taken from the pile of damp paper (or otherwise uniformly damped) acts upon the dry coating of paste only at the instant the pressure is applied. There is not time, under these circumstances, for the penetration and softening of the whole thickness of the layer of paste, in consequence of which irregularities in its thickness produce no effect, and there can be no crushing or absorption of the glutinous substance by the fibrous material. In no other way known to me is it possible to secure even adhesion on all parts of the same sheet, or on

a number of sheets, which shall be enough for the purposes of the printer, and yet never so much as to prevent the mechanical separation of the textile fabric in an uninjured condition.

By my invention time and money are saved, loss is prevented, and a better result is obtained than is possible by other known means.

I claim—

1. The improvement in the art of printing in register upon a textile fabric, which consists in damping said fabric, applying it with pressure to the surface of a coating of dry adhesive matter upon paper, so that it shall adhere to the same, printing successive impressions thereon with the usual precautions for maintaining a register, and then separating the fabric mechanically from its temporary backing, in the manner and for the purposes described.

2. The improvement in the art of controlling the tenacity of adhesion existing between two pliant materials pasted together—the one paper, the other a textile fabric—which consists in applying to the former an adhesive coating, drying the same, damping the other uniformly with a definite amount of water, and then pressing them together, in the manner and for the purposes described.

LOUIS PRANG.

Witnesses:

HERMAN RICHTER,
AMANDUS MEYER.