

UNITED STATES PATENT OFFICE.

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TRANSFER-INK AND PROCESS OF PRODUCING THE SAME.

979,542.

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No Drawing.

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To all whom it may concern:

Be it known that I, CHARLES F. MORSE, a citizen of the United States of America, and a resident of New York, county of New York, and State of New York, have invented a new and Improved Transfer-Ink and Method of Producing the Same, of which the following is a specification.

My invention relates to that class of transfer inks which are employed in paper patterns, the design delineated by the ink being adapted to be transferred from the pattern to a fabric. Two methods have been commonly employed in the past to bring about the desired transference from the pattern to the fabric, the first being to apply heat and pressure, and the second, moisture. The latter method would be the more desirable but for the fact that many fabrics upon which it is desired to produce the designs are of such a delicate nature that moisture applied directly thereto is liable to seriously injure them. It has been attempted in the past to moisten the paper pattern itself at the rear thereof so that the liquid-employed in thus moistening the transfer ink will not be directly applied to the fabric, but so far as I am aware, this has never been successfully accomplished.

It is the main object of my present invention to provide a transfer ink such as is capable of being transferred by moisture applied to the back of the paper carrying it, the amount of moisture necessary to be employed being so small as to positively preclude the possibility of injury to the fabric. To this end I employ ingredients which, when mixed together, produce a material, first, which will be readily soluble, second, which will readily dry sufficiently upon the paper pattern so as to prevent the same from rubbing off or sticking to other material superposed thereon, and third, will have sufficient body to enable a number of impressions to be taken from it.

The further object of my invention is to provide such ingredients as will permit the use of mineral coloring matter therein, because later, when such material has been transferred to the fabric, the transferred design may be readily washed out (where the fabric is one capable of being thus washed), while if anilin dyes were used it would be difficult, if not impossible to wash out the design once it had been so transferred.

The ingredients that I have so far em-

ployed with very successful results are glucose, corn syrup, and glycerin, together with the required mineral colors in quantity and shade to meet the proper requirements. The glucose and corn syrup act together as a vehicle for the coloring matter and constitute the main body of the ink, while the glycerin is used for the purpose of finally thinning the same down to the required consistency for use. The glucose in its ordinary condition is so thick and heavy that it would be practically impossible to properly combine it and the corn syrup together, and it is, of course, highly undesirable to reduce the glucose by the employment of water, because this would dilute the material and render it very much less efficient for the work. For this reason I preferably reduce the glucose by the employment of heat, preferably treating the same in a double boiler so as to apply the heat gently and in not too great a quantity. After the glucose has been sufficiently reduced in this manner I add the corn syrup in the desired proportion, such proportion being, for instance, two parts of the syrup to one part of glucose. The glucose is the element which gives the required "tackiness" to the product, such as is essential in an ink of this character particularly when employed in a printing press, but the glucose used alone would dry too quickly and too hard and would not be readily soluble enough when later it was required to make a transfer. Syrup when added has the effect of keeping the glucose in a readily soluble condition and prevents the glucose from drying too quickly or too hard. After the corn syrup and glucose are thoroughly mixed together the coloring material may be added thereto; preferably this coloring material comprises the ordinary mineral colors which may be ground in the aforementioned vehicle just as such mineral colors are ordinarily ground in oil and the like in the manufacture of paint. Thereafter glycerin may be added in quantities sufficient to bring the material down to the required consistency. This particular consistency varies in accordance with the method of employment of the ink. If the ink is to be employed in ordinary flat bed printing presses a less quantity of glycerin is required than if the ink is to be employed in the more rapidly moving rotary web presses. For flat press work I have found that the addition of about 100% of

glycerin gives a good result. While the main function of the glycerin is to thin the material down to the proper consistency, I have found in practice that the result is also to give a greater flexibility to the ink so as to prevent it from drying too hard or becoming too brittle.

The glucose and corn syrup I employ are such as are commonly sold on the market under those terms at the present day. The glucose contains about 10% of free water; about 35% of dextrose, and about 55% dextrin. The corn syrup, on the other hand, contains about 15% free water, and from 10 to 20% of molasses, the remainder being dextrose and dextrin in about the relative proportions in which they exist in the glucose. In other words, the corn syrup is a form of glucose, but it contains in addition thereto, from 10% to 20% molasses and a somewhat larger quantity of free water than that contained in the material which I term herein the glucose element. In referring to glucose and corn syrup in the specification and claims herein, it will be understood that in the use of such terms, I intend to thereby define materials of the character above specified.

I have found that by employing the foregoing formula I produce a substance which may be readily printed in substantially the ordinary manner upon a coarse open-grained paper, and that the ink thus printed upon the paper readily dries upon the surface sufficiently to enable the necessary handling of the paper patterns immediately they are printed, yet, I have found in practice that the ink remains very readily soluble for a long time thereafter and is so readily soluble that if a paper pattern, prepared as above set forth, is laid face downward upon a piece of fabric upon which it is desired that the design shall be transferred, and the back of the paper pattern be but slightly damped, the design will be immediately transferred to the fabric without the moisture thus employed affecting the fabric in any way. I have also found that the same paper pattern may be used to give a comparatively large number of transfers, which transfers may be made one after another or at considerable intervals, if preferred. The paper pattern may be allowed to dry after one impression is taken and then later on another impres-

sion taken and so on, or, with one damping a number of impressions may be taken immediately. If the paper pattern is allowed to dry it may thereafter be handled just as readily as before,—that is to say, without there being any danger of the ink rubbing or otherwise coming off. I have also found that the ink prepared in this manner has no tendency to run, and that clean, sharp, and clear impressions are produced. I attribute this largely to the employment of the glucose, and the comparatively considerable quantity of glucose which I employ is rendered possible by the employment of the corn syrup.

It will, of course, be understood that the proportions of the foregoing ingredients may be varied considerably to meet different conditions.

What I claim is:

1. A transfer ink comprising a coloring material, a vehicle therefor comprising glucose and corn syrup, and glycerin sufficient to give the required consistency.
2. A transfer ink comprising a vehicle for coloring material, composed of glucose and corn syrup in the proportion of one part of the former to two parts of the latter, coloring material of the required quantity and shade, and a sufficient quantity of glycerin to reduce the product to the required consistency.
3. A transfer ink comprising a vehicle for coloring matter composed of glucose and commercial corn syrup in the proportion of one part of the former to two parts of the latter, mineral coloring material of the required quantity and shade, and glycerin to an amount about equal to the glucose and the corn syrup.
4. The process of producing a transfer ink which consists in first thinning glucose by the gentle application of heat, then mixing commercial corn syrup therewith in about the proportion of two parts of the syrup to one part of the glucose, and then adding a coloring material and sufficient glycerin to reduce the product to the required consistency.

CHARLES F. MORSE.

Witnesses:

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