Patented Jan. 17, 1939

2,144,104

UNITED STATES PATENT OFFICE

2,144,104

METHOD OF COPYING AND MOISTENING LIQUID FOR USE IN SAID METHOD

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No Drawing. Application April 14, 1937, Serial No. 136,799

7 Claims. (Cl. 41—31.5)

This invention relates to a method of copying and to a moistening liquid for use in said method.

In a co-pending application of Ludwig W. Wagner, Serial No. 136,433, filed April 12, 1937, which has been assigned to the assignee of this application, there is described a method of reproducing copies from a so-called hectograph master sheet having soluble markings on its front surface, in which successive impression sheets are brought in contact with the front surface of the master sheet, while the marking material is dissolved by a moistening liquid passed into the master sheet from a pad pressed against its back surface. The moistening liquid there described consists of or contains a solvent for the markings on the master sheet and has a viscosity several times as great as that of water to prevent it from dripping from the master sheet. The application suggests the use of still higher viscosities in order to delay the dissolving of the markings and thus increase the number of copies which can be made.

In carrying out the Wagner method, I have found that the use of moistening liquids having viscosities more than ten times as great as that of water involves practical difficulties, and that improved results may be obtained by regulating the rate of dissolution of the markings by controlling the dissolving power of the moistening liquid without increasing its viscosity.

I have ascertained that, in order to dissolve the markings at such a rate as to produce a large number of uniform copies, the dissolving power of the liquid for the dye on the master sheet should be low—most desirably between the following limits: 2.5% to 4%. By this, I mean that 100 grams of the moistening liquid should be capable of dissolving from 2.5 grams to 4 grams of the dye. When a liquid of this low solvent power is used, the viscosity of the liquid may be moderate—between five and ten times that of water—without causing too rapid dissolution of the dye.

A moistening liquid of this low solvent power may be provided in accordance with my invention by a mixture of a strong solvent for the dye with a compatible liquid which is a non-solvent for the dye, both liquids and the mixture having moderate viscosities.

I have found that certain compounds of polyvalent alcohols with organic acids are solvents for the aniline dyes which are practically non-volatile, are non-hydroscopic, and have moderate viscosities. They are, however, strong solvents. Thus, diglycol laurate has a solvent power for aniline dyes amounting to 7% to 10% by weight. This solvent is perfectly miscible with white mineral oil which is a non-solvent for aniline dyes and which, like the solvent mentioned, is non-volatile, non-hydroscopic, and of moderate viscosity. A mixture of equal parts of diglycol laurate and white mineral oil has a low solvent power for aniline dyes amounting to about 4% by weight. The mixture is a very stable liquid as its component are perfectly miscible and are both non-volatile and non-hydroscopic. The mixture has the moderate viscosity of 6.22 times that of water. A pad may be impregnated with it again and again without becoming gummy.

A preferred example of my method of making copies consists in pressing the back surface of a hectograph master sheet against a pad impregnated with a moistening liquid consisting of a mixture of equal parts of diglycol laurate and white mineral oil. Successive impression sheets are brought into contact with the front surface of the master sheet while its back surface is pressed against the pad. The slow dissolution of the dye on the master sheet results from transferring substantially uniform amounts of dye to the impression sheets, making a series of one hundred or more clear uniform copies.

It will be understood that my invention is not limited to the preferred example given and that my preferred moistening liquid may be replaced by other liquids having similar chemical and physical properties.

What I claim is:

1. In the method of reproducing copies by bringing successive impression sheets into contact with the front surface of a master sheet having soluble markings on its front surface, the step which comprises passing through the master sheet from its back surface a liquid having a viscosity between five and ten times that of water and a solvent power for the marking material between 2.5% and 4% by weight.

2. In the method of reproducing copies by bringing successive impression sheets into contact with the front surface of a master sheet having soluble markings on its front surface, the step which comprises passing through the master sheet from its back surface a liquid having a viscosity between five and ten times that of water and consisting of a mixture of a non-volatile, non-hydroscopic solvent for the marking material, and a non-volatile, non-hydroscopic non-solvent for the marking material which is perfectly miscible with said solvent.

3. In the method of reproducing copies by

bringing successive impression sheets into contact with the front surface of a master sheet having soluble markings on its front surface, the step which comprises passing through the master sheet from its back surface a liquid consisting of a homogeneous mixture of substantially equal parts of a compound of a polyvalent alcohol and an organic acid, and a mineral oil compatible therewith.

4. In the method of reproducing copies by bringing successive impression sheets into contact with the front surface of a master sheet having soluble markings on its front surface, the step which comprises passing through the master sheet from its back surface a liquid consisting of a mixture of diglycol laurate and mineral oil in approximately equal parts.

5. A liquid for introduction into a hectograph master sheet for making copies therefrom, consisting of a non-aqueous homogeneous mixture of a solvent for the dye on the master sheet and a non-solvent for the dye which is compatible with said solvent, said mixture having the following properties: viscosity between five and ten times that of water, dissolving power for aniline dye between 2.5% and 4% by weight, substantially non-volatile, non-hydroscopic.

6. A liquid for introduction into a hectograph master sheet for making copies therefrom, consisting of a non-aqueous homogeneous mixture of substantially equal parts of a compound of a polyvalent alcohol and an organic acid, and a mineral oil compatible therewith.

7. A liquid for introduction into a hectograph master sheet for making copies therefrom, consisting of a non-aqueous mixture of diglycol laurate and white mineral oil in approximately equal parts.

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