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MATERIAL FOR MAINTAINING PRINTING AND LITHOGRAPHIC PLATES AND PRESS PARTS

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This invention relates to a method of maintaining the plates and parts of printing and lithographic presses over which the ink is filmed when the presses are in operation, in such condition when the presses are not in operation that they will retake the ink promptly upon resumption of operation. If ink be permitted to dry on the plates or parts of lithographic or printing presses, the presses cannot be put back into operation until the ink has been removed. It is, therefore, conventional at the close of each day's run or when a plate is removed from a press, to clean all of the parts of the press over which the ink has been filmed. It has been conventional for this purpose to use either petrollic distillates such as gasoline and naphtha or turpentine.

The turpentine has better solvent action upon the inks than the petrollic distillates, particularly if the ink is partially dry, in which case the solvent action of the petrollic distillate is wholly inadequate. The turpentine has the additional advantage over the petrollic distillates that it leaves a sticky, gummy residue on the surfaces cleaned which tends to render the surfaces ink-receptive, thereby facilitating resumption of operation. In contrast, the petrollic distillates clean the surfaces absolutely bare and it is often difficult, if not impossible, to get the surfaces to take the ink properly upon resumption of operations.

Turpentine has two very outstanding disqualifications, however, the first being that the residue is variable from batch to batch, both as to quantity and as to quality, the second being that it has very toxic effects upon the workmen and produces very severe cases of dermatitis.

Therefore, the object of this invention is to provide a method of removing the ink from printing and lithographic plates and press parts, a method of maintaining the surfaces in ink-receptive condition during the period of non-use, and a material for accomplishing these results, preferably jointly.

The invention comprises the use of a relatively non-toxic liquid such as a petrollic distillate which has been modified in one of two ways, or preferably both. The first modification of the petrollic distillate contemplated by this invention comprises incorporating therein a substance adapted to augment the solvent action of the distillate toward ink and particularly toward partially dry ink. The second modification contemplated by this invention comprises adding to the petrollic distillate a substance depositing a sticky, gummy residue adapted to maintain the surface of the plate or press part on which it is deposited in a condition to re-take the ink at the end of the period of non-use.

It will be obvious to the skilled in the art that many coal tar distillates may be substituted for the petroleum distillates, the latter being used as an example for the reason that the petrollic distillates are in general cheaper and less toxic than coal tar distillates which frequently possess very similar or analogous properties. In fact, it will be obvious to the skilled in the art from this disclosure that the requisites of the material responsive to this teaching and invention can best be described by reference to pertinent physical, chemical properties, rather than by the more conventional classifications. For instance, the sticky, gummy residue adapted to maintain the surface in ink-receptive condition may be constituted by practically any oil soluble gum or resin plus a plasticizer if the gum or resin be of the type to become hard or brittle without it. Likewise, the material adapted to increase the solvent action of the petrollic distillate toward ink may be either a member of the terpene family or an essential oil or one of the alcohols readily miscible with gasoline.

The invention may therefore be said to reside in the determination that ink may be removed from the surfaces of plates and parts of lithographic and printing presses and said surfaces maintained in ink-receptive condition by means of a volatile petrollic distillate containing a dissolved material adapted to leave an ink-receptive, sticky, gummy residue on the surfaces, in addition to which it is preferable that the solvent action of the petrollic distillate toward the ink be augmented by incorporation in the petrollic distillate of a material having different, greater, or wider solvent action for ink ingredients than that possessed by the petrollic distillates. This auxiliary solvent may likewise increase the power of the petrollic distillate to dissolve and hold in solution the residue constituting material.

According to this invention the primary solvent may be a petrollic distillate such as V. M. & P. naphtha, gasoline, or benzine.

The material adapted to constitute the ink-receptive residue may be ester gum or rosin plasticized with castor oil or with medicinal white oil, a phthalic anhydride glycerol resin modified or plasticized by the addition of fatty acid either joined in the molecule chemically or admixed with the resin physically. In any case, the material must constitute a tacky, grease-receptive residue.

The material adapted to increase the solvent action of the petrollic distillate may be pine oil or may be other members of the terpene series, or may be higher alcohols derived in the methanol synthesis and whose boiling points range from 160–250°C., such as a product consisting of about 60% primary alcohols with approximately 8 carbon atoms per molecule and 40% of the secondaries with the average number of carbon atoms per molecule of about 9.

The following examples indicate the broad range of this invention:

Example 1

Two (2) parts of ester gum and one (1) part of castor oil are dissolved in ten (10) parts of pine oil. The pine oil preferably should not contain water as it would separate out on mixing with mineral spirits. To effect a rapid solution of the ester gum in the pine oil, the mixture is heated to about 100° C. After cooling, the resulting solution composed of the pine oil, ester gum and castor oil is stored in suitable containers and used as needed.

The general lithographic solvent is finally made by dissolving thirteen (13) parts of the above described solution with eighty-seven (87) parts of a mineral spirit, such as V. M. & P. naphtha, gasoline, benzine, etc.

Example 2

A.—A concentrated solution of pine oil, castor oil, and ester gum may be prepared by mixing ten (10) parts pine oil, one (1) part castor oil, and two (2) parts ester gum. To effect a rapid solution, the mixture is heated to about 80–100° C. With intermittent stirring. A perfectly clear solution results, which on cooling may be stored and used as needed by diluting this concentrated material with the desired petroleum base in the proportions desired (for example, by mixing eighty-seven (87) parts V. M. & P. naphtha with thirteen (13) parts of the concentrated solution).

B.—The desired residue is produced by heating a mixture of two (2) parts ester gum and one (1) part castor oil to about 130° C. until the mixture is perfectly clear and homogeneous. On cooling, this material may be stored. The final solution is made by dissolving three (3) parts of the tacky material in a mixture of eighty-seven (87) parts petroleum base (for example, V. M. & P. naphtha) and ten (10) parts pine oil.

Example 3

Substitute rosin for ester gum in Example 2, and in place of pine oil use synthetic dipentene, which possesses no irritating properties.

Example 4

The desired residue is produced by heating ten (10) parts eucalyptus oil, two (2) parts rosin, one (1) part lard oil. The resulting solution is then diluted with eighty-seven (87) parts of the petroleum base (for example, V. M. & P. naphtha).

Example 5

A concentrated solution of the higher synthetic alcohols of the type described, castor oil, and ester gum, may be prepared by mixing ten (10) parts alcohol, one (1) part castor oil, and two (2) parts ester gum. To effect a rapid solution, the mixture is heated to about 80–100° C. with intermittent stirring. A perfectly clear solution results, which on cooling may be stored and used as needed by diluting this concentrated material with the desired petroleum base in the proportions desired (for example, by mixing eighty-seven (87) parts V. M. & P. naphtha with thirteen (13) parts of the concentrated solution).

Example 6

A concentrated solution of pine oil, castor oil, and a synthetic resin of the type described, may be prepared by mixing ten (10) parts pine oil, one (1) part castor oil, and two (2) parts synthetic resin. To effect a rapid solution, the mixture is heated to about 80–100° C. with intermittent stirring. A perfectly clear solution results, which on cooling may be stored and used as needed by

diluting this concentrated material with the desired petroleum base in the proportions desired, (for example, by mixing eighty-seven (87) parts V. M. & P. naphtha with thirteen (13) parts of the concentrated solution).

Example 7

Two and five-tenths (2.5) parts of a synthetic resin of the type described, and five-tenths (0.5) parts castor oil are dissolved in ten (10) parts of pine oil. The pine oil preferably should not contain water as it would separate out on mixing with mineral spirits. To effect a rapid solution of the synthetic resin in the pine oil, the mixture is heated to about 100° C. After cooling the resulting solution composed of the pine oil, synthetic resin, and castor oil is stored in suitable containers and used as needed.

The general lithographic solvent is finally made by dissolving thirteen (13) parts of the above described solution with eighty-seven (87) parts of a mineral spirit, such as V. M. & P. naphtha.

Example 8

Three (3) parts of residue forming material constituted by two (2) parts ester gum and one (1) part castor oil heated together dissolved in ninety-seven (97) parts petrollic distillate, constitute a suitable ink removing and plate protecting material, though of less solvent power than the liquids containing pine oil or its equivalent in function.

Not only may the nature of the components of the materials responsive to this invention be selected over wide range, but the proportions of the materials selected may be varied in relation to one another and to the petrollic distillate, those disclosed in the examples simply having been chosen as typical.

Inasmuch as the invention herein disclosed is constituted by application of certain broad principles of physical chemistry of the lithographic and printing arts rather than by any particular selection of individual chemicals or other proportions in relation to one another, we desire to be limited only by the ensuing claims:

We claim:

1. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, a material dissolved therein possessed of a different solvent capacity for the ink than the petrollic distillate to augment the solvent action of the resulting liquid, and a residue constituting material dissolved in said petrollic distillate comprising an oil soluble, non-drying, solid material.

2. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, a material dissolved therein possessed of a different solvent capacity for the ink than the petrollic distillate to augment the solvent action of the resulting liquid, and a residue constituting material dissolved in said petrollic distillate comprising ester gum, and castor oil.

3. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, a material dissolved therein possessed of a different solvent capacity for the ink than the petrollic distillate to augment the solvent action of the resulting liquid, and a residue constituting material dissolved in said petrollic distillate comprising rosin, and castor oil.

4. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, a material dissolved therein possessed of a different solvent capacity for the ink than the petrollic distillate to augment the solvent action of the resulting liquid, and a residue consituting material dissolved in said petrollic distillate comprising a phthalic anhydride and glycerol resin modified by a fatty acid.

5. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, pine oil as an auxiliary solvent, and a residue constituting material dissolved in said petrollic distillate comprising an oil soluble, non-hardening, solid material.

6. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, pine oil as an auxiliary solvent, and a residue constituting material dissolved in said petrollic distillate comprising ester gum and castor oil.

7. A material adapted to remove ink from plates and parts of printing and lithographic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, pine oil as an auxiliary solvent, and a residue constituting material dissolved in said petrollic distillate comprising rosin and castor oil.

8. A material adapted to remove ink from plates and parts of printing and litho-

graphic presses and to maintain the surfaces thereof in ink-receptive condition, said material comprising a petrollic distillate, pine oil as an auxiliary solvent, and a residue constituting material dissolved in said petrollic distillate comprising a phthalic anhydride of glycerol resin modified by a fatty acid.

In witness whereof, we hereunto subscribe our names.

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