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PROCESS AND COMPOSITION FOR TREATING PHOTO COPYING PAPER

Emanuel Kafig, Silver Spring, Md.

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9 Claims. (Cl. 117—113)

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The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to an improvement in photographic copy paper and more particularly a contact photographic paper rendered sufficiently transparent as to make negative images thereon visible in positive form and the process of making same.

It is therefore an object of this invention to provide a photographic print paper chemically treated to effect a uniform degree of transparency without loss of an image appearing thereon.

Another object of this invention is to provide a process for treating a negative photographic print to make a negative reproduction of printed matter appearing thereon readable from the reverse side as a positive print.

Still another object of this invention is to provide a process for the quick and economical production of readable contact photographic reproductions.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description.

In the reproduction of printed matter, such as material from a book or magazine, reports, letters, or the like, it is customary practice to utilize a photographic device that effects a negative print of the page copied on a sensitized sheet placed thereagainst and properly exposed. Such a device operates on the principle that light may be transmitted through a slow photographic paper onto a printed page where a certain portion of the light is absorbed by the dark areas constituting the print and like symbols thereon with the non-absorbed light being reflected back to the sensitized photographic paper by the white areas. The result is a white on black negative reproduction of the page copied. This reproduction is, of course, a mirror image of the original. The standard procedure is then to effect a positive print by making a copy of the negative by following the same procedure used to produce the negative. This procedure is not only time consuming, but also expensive in that it requires a duplication of all the materials used in making the first or negative copy. Various attempts have been made to eliminate the necessity of having to make two prints by making the negative print readable from the reverse side. The most successful way to accomplish this result has been found to be to make the negative print transparent; however, until now the methods of treatment devised to render such paper transparent have proved unsatisfactory for different reasons. One of these reasons is that the transparency effected has been relatively of short duration, lasting less than 24 hours, and another is that the paper so treated developed such oily characteristics as to require special handling and storage.

I have found that these difficulties are overcome in a paper processed in the manner hereinafter described to effect the degree of transparency desired.

The sensitized paper is first exposed to the material to be reproduced in the usual manner. The negative print so produced is then developed, and washed according to standard practices. The next step according to this invention is to impregnate the paper in a solution of paraffin wax and mineral oil, as for example a light petroleum lubricating oil, heated to near the boiling point, for example, within the range of about 80 to 95° C., and to which a suitable wetting agent has been added. Suitable examples include commercial wetting agents or detergents, such as Dreft (high molecular weight sodium alkyl sulfate), Aerosol (sodium dioctylsulfosuccinate). This inventor has also used Syntex (glyceryl monolaurate sulfate); in fact, any wetting agent can be used to advantage. Excess solution may be wiped from the impregnated sheet after which it is ready for immediate use. I have found that single weight photographic paper becomes completely impregnated with the solution in approximately 30 seconds' time and can be read immediately so that a relatively large amount of time is saved as compared with the time required by conventional methods.

Photo copies treated in this manner can be readily read by reflected light through the paper from the reverse side as positive prints and when placed over a white reflecting surface the contrast is excellent. Prints so treated do not lose their transparency with time, and are not greasy or oily to the touch.

The ingredients above specified are preferably mixed separately, i. e., the paraffin and oil are heated together and then I add the wetting agent. The proportions found most suitable are hereinafter set forth as an illustrative example contemplated by the instant invention, the percentages being by weight:

	Percent
Paraffin wax	62
Mineral oil (or No. 10 motor oil)	37
Wetting agent	1
	100

It is to be understood that the proportions given in the above example are preferred, but that the proportions may be varied considerably. Suitable proportions are about 55–65% of paraffin wax, about 35–45% of either mineral oil or No. 10 motor oil, and 0.5 to 1.5 of the wetting agent.

The quantity of impregnating material to be prepared at any one time need not necessarily be dependent upon the number and size of prints to be treated; however, in impregnating approximately 100 sheets of 8 x 10 inch single weight photographic paper I have satisfactorily used the following quantities and materials, namely:

Three pounds of paraffin wax
One quart of light mineral oil or No. 10 motor oil
Five grams of a commercial detergent such as Aerosol, diluted in about
Ten cc. of water

To attain the most satisfactory results I bring the paraffin wax and oil to the boiling point in a suitable receptacle such as a flat photographic tray, and then add the wetting agent diluted in water to the boiling solution. The solution is then ready for immediate use and any left-over material can be kept in the tray indefinitely at room temperature without evaporation, ready for use by merely being reheated to about the boiling point. The vapor from the hot solution is neither inflammable nor objectionable to the operator.

No special drying procedure is required and I have found no tendency of copy print paper treated according to the above-described process to lose any of its inherent flexibility; nor to lose the degree of transparency attained.

The degree of transparency attained is to be understood as that required to make all photographic reproductions of type and like symbols discernible on the face of the print in negative form readily readable from the reverse side in positive form.

While I have described a specific application of the present invention, obviously many modifications and variations thereof are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

I claim:

1. A composition for transparentizing photographic paper consisting essentially of about 55% to 65% paraffin wax, about 35% to 45% mineral oil, and about 0.5% to 1.5% of a wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

2. A composition for transparentizing photographic paper consisting essentially of about 55% to 65% paraffin wax, about 35% to 45% petroleum lubricating oil, and about 0.5% to 1.5% of a wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

3. A composition for transparentizing photographic paper consisting essentially of about 55% to 65% paraffin wax, about 37% mineral oil, and about 1% of a wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

4. A composition for transparentizing photographic paper consisting of about 62% paraffin wax, about 37% light petroleum lubricating oil, and about 1% wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

5. A photographic paper rendered transparent by being impregnated with a composition consisting of about 55% to 65% paraffin wax, about 35% to 45% mineral oil, and about 0.5% to 1.5% wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

6. A photographic paper rendered transparent by being impregnated with a composition consisting of about 55% to 65% paraffin wax, about 35% to 45% light petroleum lubricating oil, and about 0.5% to 1.5% wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

7. A photographic paper rendered transparent by being impregnated with a composition comprised of about 62% paraffin, about 37% mineral oil, and about 1% wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

8. A method for rendering a sheet of photographic paper transparent which comprises heating a solution comprised of a major proportion of paraffin and a minor proportion of mineral oil and a wetting agent to about 80° to 95° C., said wetting agent being selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate, immersing the paper in said heated solution, and removing any excess solution from the surfaces of said paper.

9. A composition for transparentizing photographic paper consisting essentially of about 72% paraffin wax, about 37% mineral oil, and about 1% of a wetting agent selected from the group consisting of a high molecular weight sodium alkyl sulfate, sodium dioctylsulfosuccinate, and sodium glyceryl monolaurate sulfate.

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