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# UNITED STATES PATENT OFFICE

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## COATED PAPER AND METHOD OF MAKING THE SAME

No Drawing. Continuation of application Serial No. 335,390, filed January 26, 1929. This application filed November 12, 1929. Serial No. 406,724.

This invention relates to a coating for paper and especially stereotype mats.

This application is a continuation of my copending application Serial No. 335,390, filed January 26, 1929.

The objects of my invention are to produce a smooth surface so that fine cuts reproduce well; to bind the surface fibers together so that they will not be loosened by mechanical action as when stereotype plates are removed; and to facilitate release of metal after stereotype metal is cast. Although my coating is especially useful for stereotype mats, it may also be applied to other paper or fibrous products.

Various coatings have been used for stereotype mats but none have proved entirely satisfactory. I have discovered that a coating will possess superior qualities if it contains certain ingredients which have not been used heretofore to the best of my knowledge. My preferred formula comprises a water solution or suspension which includes thin boiling starch, yellow dextrin, clay, bentonite, a salt of a higher fatty acid, and a preservative, such as potassium chromate, but I believe that the fatty acid salt is the ingredient which is of most importance, especially when the coating is used to face stereotype mats. Salts of the higher fatty acids produce a smooth surface and allow the metal to be released readily. However, if it is used in excess the adhesion of the coating to the mat is decreased to the point where the coating adheres to the type during rolling and the surface also becomes too dense and hard. As examples of fatty acids salts may be mentioned the caustic alkali, alkaline earth, and heavy metal salts of palmitic, stearic, oleic acids, etc. The salts of the individual acids may be used, or their mixtures. The salts of the higher fatty acids may be used also admixed with the metallic salts of abietic and similar resin acids. The term "fatty acid salt" will be used to include any one of the salts mentioned above or their mixtures, and is not confined to the fatty acids mentioned.

The following preferred formula may be varied over a considerable range to suit the specific requirements of the user:

| | |
|---|---|
| Thin boiling starch | 2 lbs. |
| Yellow dextrin | 4 lbs. |
| Clay (kaolin) | 7.5 lbs. |
| Bentonite | 2.5 lbs. |
| Salt of a higher fatty acid (sodium stearate) | .325 lbs.—(0.1—0.5 lbs.) |
| Potassium chromate | 70 grams |
| Water | 11 gallons |

All the constituents except the fatty acid salt are mixed thoroughly in the dry condition so that the finished product will be free from lumps of bentonite. Add 10 gallons of water and boil until the suspension does not increase in thickness. Actual boiling for 15 minutes is usually ample. A soluble fatty acid salt such as sodium stearate is dissolved in 1 gallon of hot water, and the two solutions after some cooling are mixed thoroughly. The coating solution has a consistency approximating that of a paint. The coating when cold is applied to the paper or mats by means of a brush or coating machine. The fatty acid salt is preferably kept below 1% (dry fatty acid) of the total mixture.

The yellow dextrin is used on account of its low viscosity since the latter permits it to penetrate the surface of the mat and bind the fibers together. It is preferred over the white dextrin which is more gummy and possessed of low penetrability. The percentage of yellow dextrin may vary preferably from 3 to 5 percent of the coating mixture. I also believe that the use of yellow dextrin in stereotype mat coatings is novel.

The starch has a high viscosity and low penetrating power. It gives body to the coating and cements the clay together. The percentage may vary over a considerable range. Thin boiling starch is prepared by heating starch with small amount of acid or oxidizing agent at 100° F. There is a partial hydrolysis of the starch without bursting of granules. It is sold as 20, 30, 60, 90° thin boiling starch depending on fluidity after boiling. White dextrin is practically 90° thin boiling starch.

Clay such as kaolin is used for the purpose of filling the depressions in the paper or stereotype mat and producing a smooth sur-

face. The amount may vary considerably.

Bentonite, a colloidal clay, is used for two purposes—to give body to the coating so that it will not settle readily; and when used on stereotype mats to produce a certain porosity to the coating through contraction on drying. The amount may vary considerably. Hydrated gypsum may also be used as it loses part of its moisture when the mat is "scorched".

The potassium chromate is added to prevent molding by fungi. Other chemicals, such as sodium benzoate or boric acid may be used for that purpose.

If it is desired to use the insoluble salts of the alkali earths and heavy metals a solution of the alkali metal salts of the fatty acids, such as sodium oleate, sodium stearate, etc., may be treated with a salt of the desired metal such as zinc sulfate, magnesium sulfate, alum, calcium chloride, etc., as is well known to those skilled in the art. The precipitation is performed preferably after mixing, heating and cooling of the constituents, using rapid stirring, in order that the insoluble fatty acid salt formed will be finely and uniformly distributed.

For stereotype mats bentonite or its equivalent should be used in the coating. For paper other than mats the bentonite or its equivalent may be replaced entirely or in part by clay in addition to the clay specified.

I claim:

1. The method of making a pervious surface on a stereotype mat which comprises facing the mat with a water suspension containing a salt of a higher fatty acid and a hydrated mineral which loses its water on "scorching", and then "scorching" the mat.

2. The method of making a pervious surface on a stereotype mat which comprises facing the mat with a water suspension containing a salt of a higher fatty acid and bentonite, and then "scorching" the mat.

3. A stereotype mat having a coating comprising a salt of a higher fatty acid and yellow dextrin.

4. A stereotype mat having a coating comprising a salt of a higher fatty acid, yellow dextrin, a thin boiling starch, clay, and a preservative.

5. A stereotype mat having a coating containing yellow dextrin as one of the ingredients.

6. A stereotype mat having a coating comprising a salt of a higher fatty acid, yellow dextrine and thin boiling starch.

7. A stereotype mat having a coating comprising a salt of a higher fatty acid, yellow dextrin and clay.

8. A stereotype mat having a coating comprising a salt of a higher fatty acid and bentonite.

9. A stereotype mat having a coating comprising an insoluble salt of a higher fatty acid and bentonite.

10. A stereotype mat having a surface coating of a mixture containing a salt of a higher fatty acid in an amount of less than 5 percent (dry basis) of the solid ingredients of said coating.

11. A coating solution comprising a salt of a higher fatty acid and a finely divided mineral which loses its water on "scorching" in suitable proportions for use as a coating on the impression surface of a stereotype mat.

12. A coating solution comprising a salt of a higher fatty acid and bentonite in suitable proportions for use as a coating on the impression surface of a stereotype mat.

13. A coating solution comprising an insoluble salt of a higher fatty acid and bentonite in suitable proportions for use as a coating on the impression surface of a stereotype mat.

In testimony whereof I affix my signature.

ARLIE W. SCHORGER.