

UNITED STATES PATENT OFFICE

CHARLES F. KUMLI, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
SELECTOGRAPH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

STENCIL SHEET

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This invention relates to stencils and particularly to stencil sheets comprising a fibrous, porous support, such as Japanese yoshino paper, having a hardened coating of organic colloid, impervious to ink, in which the stencil characters are cut, by the expression process, to permit the ink or other coloring to print through the fibers of the paper or other porous support.

One of the common types of stencils long in use consisted of Japanese yoshino paper coated with gelatin which was coagulated either by a chrome salt such as potassium dichromate, or by an aluminum salt, which chemically combined with the gelatin to form a hard coating.

In order to adapt the coated sheet for making the stencil by pressure, as for instance by the impact of the types of a typewriter, the sheet must be dampened so as to permit the type to rupture the impervious film without cutting or otherwise injuring the fiber of the paper, or other porous support. In dampening coated sheets which have been hardened by aluminum salts alone, the fibers of the paper have a tendency to stretch so as to cause the stencil to become baggy in the frame, and the paper has a tendency to become sticky. For this reason, aluminum salts have not been satisfactory as hardening agents.

Potassium dichromate as a hardening agent is also objectionable because it necessitates two steps in the coating process. When potassium dichromate is employed, the stencil sheet must first be coated with the glue or gelatin and then coated with the hardening solution.

If the potassium dichromate were mixed with the glue or gelatin, before being applied to the sheet, coagulation would take place in the solution, thereby rendering it difficult to apply.

The main objects of this invention are to provide an improved coating material which is waterproof and which has none of the aforementioned objectionable characteristics inherent in solutions containing chrome or aluminum salts; to provide a coating solution which may be applied in one operation; to provide an improved stencil sheet which is tough and waterproof and which will not become baggy when dampened; and to provide an improved method of preparing stencil sheets, which are to be moistened before being used.

Stencils may be made of any suitable fibrous, porous material, but Japanese yoshino paper is preferred because of its thin texture.

The improved coating material comprises an organic colloid, a volatile vehicle, a tempering agent, and an ammoniacal solution of cupric hydrate commonly known as Schweitzer's reagent.

The colloid is the base or binding agent. It binds together the fibers of the paper and gives strength to the sheet. A good grade of hide glue has been found to be satisfactory, but it may be replaced by any coagulable organic colloid.

The volatile vehicle may be water or any other suitable solvent which evaporates quickly after the film has been applied to the sheet.

Glycerine is preferred as the tempering agent, but it may be replaced by sugar, glucose or any of the other well known tempering agents.

The Schweitzer's reagent is the waterproofing agent. It coagulates the glue or other organic colloid to render the colloid waterproof.

In preparing this improved coating material, the ingredients are mixed preferably in two separate vessels.

In one vessel, the glue is soaked in water for a period ranging from 6 to 10 hours. The glycerine is then added and the mixture heated to about 70° C. These ingredients may be combined in various proportions but highly satisfactory results can be obtained as follows:

	Parts by weight Ounces
Glue	11
Water	43
Glycerine	20

In another vessel, copper sulphate is dissolved in water by the application of heat.

The solution is then cooled and ammonium hydroxide is added.

When the first few drops of ammonium hydroxide come in contact with the solution of copper sulphate and water, a blue precipitate of cupric hydroxide is formed. A sufficient quantity of ammonium hydroxide is used to redissolve the cupric hydroxide.

The ingredients of the solution may be combined satisfactorily in the following proportions:

	Parts by weight Ounces
Copper sulphate -----	15
Water -----	42
Ammonium hydroxide (30% solution) --	9

The solutions in the two vessels are then mixed and the temperature brought to about 40° C. At this temperature the improved coating may be applied to the sheets by any of the usual methods. After the sheets are dried they are water and oil proof and ready for use.

The copper sulphate herein mentioned may be replaced by any water soluble copper salt and the Schweitzer's reagent may be made by other methods than that described.

Although this invention is here particularly described in its preferred embodiment, it will be understood that the product and the various steps of the process may be modified by omission or alterations of details and substitution of ingredients, without departing from the spirit of the invention as defined by the following claims:—

I claim:

1. A coating material for stencil sheets comprising a mixture of an organic colloid, a tempering agent, and Schweitzer's reagent.

2. A coating material for stencil sheets comprising glue, a tempering agent, and Schweitzer's reagent.

3. A coating material for stencil sheets comprising a mixture of an organic colloid, a tempering agent, a water soluble copper salt, and ammonium hydroxide.

4. A coating material for stencil sheets comprising a mixture of glue, water, a tempering agent, a water soluble copper salt, and ammonium hydroxide.

5. A stencil sheet coated with a mixture of an organic colloid, a tempering agent, and Schweitzer's reagent.

6. A stencil sheet coated with a mixture of an organic colloid, a tempering agent, a water soluble copper salt, and ammonium hydroxide.

7. A composition for use in coating the porous base of a stencil sheet comprising a mixture of an organic colloid, a tempering agent, copper sulphate, water, and ammonium hydroxide.

8. A stencil sheet coated with a mixture of glue, a tempering agent, copper sulphate,

and ammonium hydroxide.

9. A composition for use in coating the porous base of a stencil sheet comprising an organic colloid about 11 parts, water about 43 parts, a tempering agent about 20 ounces, copper sulphate, and ammonium hydroxide.

10. The method of preparing a coating solution for stencils which consists in mixing an organic colloid and water, adding a tempering agent, and then adding Schweitzer's reagent.

11. The method of preparing a coating material for stencils which consists in mixing an organic colloid with water and a tempering agent, and then adding to the mixture a solution of a water soluble copper salt and ammonium hydroxide.

12. The method of preparing a coating material for stencils which consists in mixing an organic colloid with water and a tempering agent, and then adding to the mixture a solution of copper sulphate, water, and ammonium hydroxide.

13. The method of preparing a coating material for stencils which consists in mixing glue about 11 parts with water about 43 parts, adding 20 ounces of glycerine, heating the mixture, making a solution of copper sulphate about 15 parts, water about 42 parts, and ammonium hydroxide about 9 parts, and then adding said solution to said mixture.

14. A stencil sheet coated with a mixture of a protein, colloid, a tempering agent, and Schweitzer's reagent.

15. A stencil sheet coated with a mixture of glue, a tempering agent, and Schweitzer's reagent.

Signed at Chicago this 17th day of December, 1928.

CHARLES F. KUMLI.