

UNITED STATES PATENT OFFICE.

WILLIAM G. FUERTH, OF NEWARK, NEW JERSEY, ASSIGNOR TO EQUILIBRATOR COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STENCIL SHEET, PROCESS, &c.

995,780.

Specification of Letters Patent. Patented June 20, 1911.

No Drawing. Original application filed December 30, 1905, Serial No. 293,873. Divided and this application filed August 21, 1907. Serial No. 389,587.

To all whom it may concern:

Be it known that I, WILLIAM G. FUERTH, a citizen of the United States, residing in Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Stencil Sheets, Processes, &c., of which the following is a specification.

This invention has reference, generally, to a wax compound for coating open-mesh tissue-paper stencil or transmitting sheets for printing-apparatus or duplicators, used for reproductions from typewritten or autographic originals.

The stencil sheet of my present invention comprises a body of a fibrous and flexible material, which has been treated and thoroughly saturated throughout with certain compounds of hydrocarbons, known in commerce as mineral waxes, preferably in combination with a gum or so called vegetable wax, and animal fat or the glycerids of a fatty acid, all with a view of providing the body of the fibrous paper with a perfect and homogeneous saturation of the compound, having a high melting point and invulnerable to the usual extremes of temperature, neutral in respect to metallic or other surfaces with which it may come in contact, unaffected by animal heat in the ordinary handling, and of such consistency as to render the coated and uniformly saturated sheet flexible and pliable in ordinary use. The blow or impact of the type of the typewriting machine denudes the fibers of the paper of the material with which the same is coated or saturated, without destructively lacerating or removing such fibers; the material thus removed being absorbed by a paper backing. There is no pulverization of the coating, to clog or fill the type, or to clog the stencil at the place of impact.

The stencil sheet is velvety to the touch and will not adhere in handling; and, because of the preservation in substantially unimpaired condition of the fibral structure of the paper or sheet, during the operation of writing thereon, its tensile strength is maintained, so that it will not readily rip or tear through the words or lines of the stencil while being handled, or while in the act of printing sheets therefrom.

To produce the stencil or transmitting sheet, I take Yoshino or any suitable fibrous

or similar paper, and thoroughly saturate the same with a compound, preferably of at least two species of hydro-carbons, known as mineral waxes, in proper proportions; and preferably in combination with a gum or binding material such as a vegetable wax; and a shortening material such as animal fat, or the glycerids of a fatty acid. The hydrocarbons used are ceresin and paraffin, preferably in equal parts by weight. It is not advisable to use more than 60 or less than 25 parts by weight of the ceresin. Japan wax is the preferred binding material or gum, and five per cent. of the same is ordinarily sufficient. The preferred shortening material is lard or suet. When lard is employed the melting point of the resulting compound is lower than when suet is used; lard being therefore preferable for stencil paper for use in winter or in cold climates, and suet for summer or hot climates. Five per cent. of the lard or suet ordinarily produces satisfactory results.

The ceresin raises the melting point of the compound, and renders the coating on the sheet highly flexible and not liable to crumble or break in handling or striking with the types. A good commercial ceresin melts at from 160 degrees up, although it is a soft wax; and in this way differs from distilled paraffin, which is relatively brittle and hard. The ceresin in the mixture softens, tones down and renders pliable and flexible the coating of the emulsion or compound to be applied to the tissue base to make the stencil sheet. The melting point of the paraffin is approximately 120°, although paraffin of a higher melting point may be used for hot climates. The Japan wax melts at about 115 degrees.

For general use in the United States, I use the above preferred proportions, the melting point of the resulting compound being 130 degrees or more. For use in the tropics I use a paraffin of a higher melting point, and more ceresin, and Japan wax and fat may be added as before, viz., 5 per cent. of each. These waxes are put all together in a retort, luted to a receiver, and the waxes and fat and everything subjected to heat in a distillation process. The retort is heated by means of a water bath so as not to discolor the emulsion, and to avoid burning the fat. The heat of distillation is about

210 degrees. I distil them to drive off aqueous substances or the excess of hydrogen, to make the coating concrete, more friable, and devoid of its natural adhesiveness. Both the vegetable wax and the ozocerite or mineral wax are not only cohesive, but they have also a certain adhesiveness, which I correct by this distillation process, in driving off the excess of hydrogen, which I have found to be the cause of the wax coatings sticking to the paper sheets with which they are sold and used. In this manner I drive off about two per cent. of the mixture, chiefly aqueous matter and hydrogen; whereupon the emulsion or compound is ready for coating the tissue sheets. Without the cooking or distillation, the compound might be more or less hygroscopic and sticky, so that the stencil sheet would stick to the unwaxed paper sheets, and not be readily separable therefrom. Moreover, by driving off the hydrogen as stated, the melting point of the compound is raised slightly. The distillate indicates that the carbon atoms are perfectly saturated. The compound or emulsion is now allowed to solidify, forms a white cake, having the appearance like tallow or paraffin, soapy to the touch. Thin shavings cut from the cake are found to be very flexible and pliable.

The Yoshino or other open-mesh tissue sheets may be dipped into the melted compound, to coat the sheets, in a well-known manner.

The soft back-sheet is also used for a cushion to prevent disintegration of the fibers, and back of that is placed a hard sheet. The wax upon the stencil sheet is not powdered or rendered perforate by slightly creasing it, and hence does not permit ink to pass through the crease, thereby preventing the appearance upon the stenciled copies of superfluous ink lines where the stencil has been accidentally creased.

This application is a division of my application No. 293,873, filed December 30, 1905.

Certain variations may be resorted to within the scope of the invention.

Having thus described my invention, I claim:

1. A stencil or transmitting sheet consisting of a porous fibrous base saturated with waxy substance having as the principal ingredients thereof paraffin and ceresin in substantially equal parts by weight, and having also a small proportion of a suitable binding material, and a small proportion of shortening material, such as an animal fat or glycerid.

2. A waxy flexible coating material for stencil sheets, comprising at least 40 parts by weight of paraffin, about 5% of a binding substance, such as Japan wax, about 5% of a shortening substance, such as an animal fat or glycerid, and the remainder being ceresin, said coating having a melting point of approximately 130° Fahrenheit.

3. A waxy flexible coating material for stencil sheets, comprising at least 40 parts by weight of paraffin, about 5% of a binding substance, about 5% of a shortening substance, such as an animal fat or glycerid, and the remainder being ceresin, said coating having a melting point of approximately 130° Fahrenheit, and deprived of about 2% by weight of the natural ingredients forming said material and consisting chiefly of aqueous matter.

4. A stencil or transmitting sheet consisting of a porous, fibrous, base saturated with a waxy substance having as the principal ingredients thereof paraffin and ceresin in such proportions as to comprise more than 25 and less than 60 parts by weight of ceresin, and having also a relatively small proportion of shortening material.

5. A waxy flexible coating material for stencil sheets having as the principal ingredients thereof paraffin and ceresin, the proportion of ceresin being greater than 25 and less than 60 parts by weight, and having also as one of its constituents a shortening material.

WILLIAM G. FUERTH.

Witnesses:

B. C. STICKNEY,
JOHN O. SEIFERT.