

# UNITED STATES PATENT OFFICE.

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## DUPLICATING STENCILING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 467,890, dated January 26, 1892.

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*To all whom it may concern:*

Be it known that I, WILLIAM G. FUERTH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Typographing Stenciling Material, of which the following is a full and clear description, such as will enable others skilled in the art to which the invention relates to make and use the same.

My invention relates to the preparation of material used in connection with a type-writer or stylus and any reduplicating machine or apparatus for reproducing type-written or other matter requiring fac-simile reproduction; and my invention consists, essentially, in coating a sheet of porous fibrous paper or fabric with a material formed by combining a marine wax with fixed oils, fats, or fatty acids, the said sheet when so coated being impervious to ink or coloring-fluids and the coating being readily extracted by other sheets placed against the coated sheet and receiving the impact of the character of the type-writer or point of the stylus.

In carrying out my invention I first prepare a compound by melting together spermaceti, sperm-oil, bottle-nose oil, or other analogous substances derived from the allied species of salt-water fish, with fixed oils, fats, or fatty acids. The proportion of these marine waxes may be varied to suit the climate and other conditions. For instance, in cold weather I prefer to use the more fluid waxes, such as sperm-oil, which may be in the proportion of six per cent. to the whole mass, more or less, while in the case of spermaceti, which is preferably used in warm weather, the proportion may exceed the other ingredients. For instance, the proportion of spermaceti may with advantage fully equal that of all the other bodies composing the material. The porous fibrous sheet is immersed in this liquid compound and slowly removed therefrom to permit the surplus material to run off when a uniform coating is transferred to the sheet. 200° Fahrenheit has been found a suitable temperature to insure a specific density and limpidity of the compound to enable one to obtain a perfect and uniform coating on the

sheet; but I do not limit myself to this exact temperature, but would state that if a temperature much in excess of that given is used the compound would become too liquid or "thin" and would pass through the pores of the fibrous paper, instead of uniformly filling the same.

In the present state of the art sheets of porous paper are pressed and rolled while their paraffine coating is in a soft or plastic state, so that the fiber of the paper and the impressed coating form a homogeneous and inseparable mass, causing the common and undesirable abrasion or perforating of the paper during the process of utilizing the sheets for reproducing purposes, whether the stencil be produced by a type-writer or stylus, and in case of non-edged or full-faced contacting characters the surface which is so pressed as above described will offer such a solid resistance to the contacting character as to defeat the production of a clear fac-simile. In addition to the above the "packing" of this coating within the indentures forms an obstruction to the free passage of the ink. A keen-edged character will perforate and injure the fiber of the paper, while a loop character will in many instances be cut entirely out.

In my invention I preferably coat both sides of the fibrous paper with my compound and remove the same by the aid of extractor-sheets placed in front and rear of the coated sheet without in any manner attacking the fiber or structure of the paper by the friction of the contacting characters.

The compositions now used for coating sheets for stencil purposes are almost wholly composed of what is improperly termed "waxes"—such as paraffine—with a varying adulteration of fixed oils to produce the proper state of pliability, and which addition of fixed oils or hydrocarbons reduced the fusion or melting point to so low a degree of temperature as to make it practically useless during warm or even moderately-heated temperatures, thereby causing the contacting faces of the coated sheets to stick or cohere and invariably to become plastic at a much lower degree of heat than would be required to fuse the same material.



The principal difficulty arising from the heretofore-coated sheets was occasioned by the coating cracking or becoming fractured when handling or removing one sheet from another, as particles of the paraffine on one sheet would cohere to those of another and be indiscriminately transferred from one sheet to the other, thereby opening up the pores in the paper, rendering the sheet pervious to the ink, and practically destroying its usefulness. When packed together, the weight of the sheets would often cause the paraffine to soften and cohere, thereby destroying their utility.

The cohesive property of paraffine is such as to make it a practical impossibility to prepare stencils without displacing or perforating and eventually destroying the fiber of the paper, as the paraffine also adheres directly to the fine fibers, and when the character strikes the paraffine it pulls the same away within the lines of the character and also tears away the fiber at the point where the contact is made, thus perforating the paper and permitting the loop characters—such as *o p b*, &c.—to be entirely cut out, allowing the ink to pass through the cut-out portion, destroying the stencil-sheet, and making unsightly and undesirable copies.

In my invention the marine waxes named, when mixed with the fixed oils, fats, or fatty acids, have the effect of greatly modifying and lessening the adhesive and cohesive properties incident to the paraffine-coated sheets

as at present made, as the spermaceti or sperm-oil produces a finely-granular condition which enables the material to fracture and break in sharp lines along the lines of the contacting character, and will thereby enable exterior non-coated sheets to extract or take off the material, so as to leave the fibers of the paper intact and undisturbed. In addition to this there can be no cohesion of sheets placed face to face, and therefore single sheets may in ordinary temperatures be readily separated from the pile without causing an abrasion or disturbance of the surfaces of the sheets.

The term "marine wax" as used by me in this description is meant to refer to the several products derived from the cavities of salt-water fish.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A composition of matter for coatingsheets for stencil purposes, consisting, essentially, of a marine wax, combined with fixed oils, fats, or fatty acids.

2. A sheet of fibrous material coated or covered with a composition consisting of spermaceti or analogous product derived from the allied species of fish, combined with fixed oils, fats, or fatty acids.

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Witnesses:

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