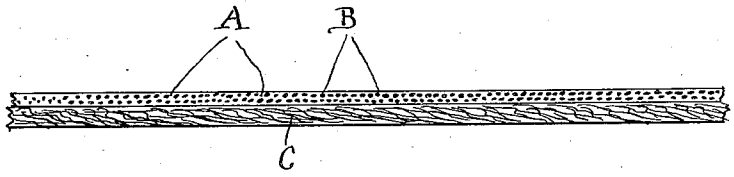
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STENCIL SHEET

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STENCIL SHEET.

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This invention relates to an improved type of stencil sheet and to a process for making the same, whereby a stencil sheet having certain new and desirable qualities is obtained. The object of this invention is to produce a stencil sheet which requires no preliminary treatment to make it take exceptionally clear impressions when struck by the blow of the type of a typewriter, or by a suitable scriber tool. Another object of this invention is to produce a stencil sheet which will retain these desirable properties for an indefinite period, so that after long storage, the sheet is in substantially the same condition as when originally made.

It has been customary heretofore to prepare such stencil sheets by coating a thin sheet of fine paper, such as a high grade unsized tissue paper, with a solution of some plastic material, such as cured gelatin and glycerin, or a plasticized cellulose ester. Such stencil sheets are not entirely satisfactory, in that they either have to be moistened before use, or where the cellulose ester is used, if a plasticiser is used, which is a solvent for the cellulose ester, the film has a tendency to be sticky or tacky, while on the other hand, where certain natural fats or oils are used, which are not solvents for the nitrocellulose, such oils will become rancid on standing over a considerable length of time.

According to my invention, these difficulties are avoided by producing a film consisting of two phases, one of which is a solid and one a liquid, somewhat in the nature of a colloid. The solid phase, which is continuous, has dispersed therein small liquid particles, so that instead of a tough continuous film on the paper, I have a spongy film which is cut by the blow from the type in the typewriter or a suitable scriber tool with extreme ease. Furthermore, the edges of such a mark as is produced, as described above, are extremely sharp in outline and permanent in form.

To better disclose the invention, reference is made to the accompanying drawing illustrating a section of my stencil sheet on a very much enlarged scale; wherein A illustrates the continuous solid phase; B the dispersed liquid phase, and C the thin sheet of tissue paper.

While many materials are suitable for the liquid or dispersed phase of my improved stencil sheet, I prefer to use such materials as are cheap and readily obtained on the market. While excellent results may be obtained with most plasticisers that are not solvents for nitro-cellulose, I usually prefer to use such cheap materials as liquid fatty acids, as, for example, oleic acid, or natural oils, such as the non-drying oils.

These materials, however, have a tendency to turn rancid on standing for a considerable length of time and develop objectionable odors. I have further discovered that these cheap natural oils may be prevented from turning rancid by the addition of small amounts of sassafrassy oil of camphor. The oil, which is in small particles, each surrounded by a wall comprising the solid continuous phase, is preserved indefinitely, so that the finished stencil sheet may be stored over very long periods of time without deteriorating. In the absence of a preservative, the oil tends to increase in acidity in becoming rancid, and the increased acidity in turn causes the oil to attack the surrounding walls of the solid phase and break down the honeycomb structure of the solid phase, which permits the globules of oil to coalesce, and thus in time to render the stencil sheet gummy or sticky, and unfit for use. The addition of the preservative agent prevents this acidifying of the oil globules, and hence preserves the solid phase against disintegration, so that the stencil sheet will retain its pliability and its other qualities unimpaired for a long period of time.

While many materials are suitable for the solid continuous phase, I prefer, on account of their uniformity and ease of handling, to use such materials as may be dissolved in ordinary solvents which are likewise compatible with solvents for the oil of the dispersed phase. I have found that most of the cellulose esters are particularly adapted for this purpose, since, when dissolved, and the solvent evaporated, they form permanent and sufficiently tough films to permanently hold the oil. Furthermore, they are impervious to the oil, are flexible, and hold their form over very long periods of time.

In order to make my invention clear, I will now describe one preferred process which I have found satisfactory for producing my improved stencil sheet:

I take 20 parts, by weight, of a lacquer compounded according to the following formula:

20 parts scrap celluloid, 41 parts tuluol, 27 parts butyl alcohol, 27 parts ethyl alcohol, 3 parts dibutylphthalate, 25 parts ethyl acetate, 30 parts butyl acetate, 11 parts ethyl acetate.

To the above 20 parts of lacquer is added 9 parts, by weight, of a suitable non-drying vegetable oil or fatty acid, and 9 parts of a suitable lacquer thinner, such as is well known in the art of lacquer manufacture, and 0.125 parts, by weight, of a 10% solution of thymol and 0.33 parts, by weight, of sassafrassy oil of camphor. This mixture is then coated on a sheet of fine unsized tissue paper in any suitable manner, as by means of dipping, brushing or the like.

A sheet, prepared as described above, dries in a few minutes, to a point where the oil begins to separate out into very small particles which are dispersed throughout the coating, since the oil used is not a solvent for the nitro-cellulose. The sheet, after thoroughly drying, is in a condition suitable for use as a stencil sheet, and retains its pliable, soft form over long periods of time, and the oil does not become rancid.

I claim:

1. A stencil sheet comprising a fine, unsized tissue paper coated with a material comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein, and a preservative to prevent the oil from becoming rancid, and breaking down of the solid phase.

2. A stencil sheet comprising a fine, unsized tissue paper coated with a material comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein in particles of substantially colloidal size, and a preservative to prevent the oil from becoming rancid, and breaking down of the solid phase.

3. A stencil sheet comprising a fine, unsized tissue paper coated with a thin layer of cellulose ester comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein, and a preservative to prevent the oil from becoming rancid, and breaking down of the solid phase.

4. A stencil sheet comprising a fine, unsized tissue paper coated with a thin layer of cellulose ester comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein in particles of substantially colloidal size, and a preservative to prevent the oil from becoming rancid, and breaking down of the solid phase.

5. A stencil sheet comprising a fine, unsized tissue paper coated with a material comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein, and a small amount of oil of camphor to prevent rancidity of the liquid oily phase, and breaking down of the solid phase.

6. A stencil sheet comprising a fine, unsized tissue paper coated with a material comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein in particles of substantially colloidal size, and a small amount of oil of camphor to prevent rancidity of the liquid oily phase, and breaking down of the solid phase.

7. A stencil sheet comprising a fine, unsized tissue paper coated with a thin layer of cellulose ester comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein, and a small amount of oil of camphor to prevent rancidity of the liquid oily phase, and breaking down of the solid phase.

8. A stencil sheet comprising a fine, unsized tissue paper coated with a thin layer of cellulose ester comprising a solid, continuous phase impervious to oil, a liquid oily phase dispersed therein in particles of substantially colloidal size, and a small amount of oil of camphor to prevent rancidity of the liquid oily phase, and breaking down of the solid phase.

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