

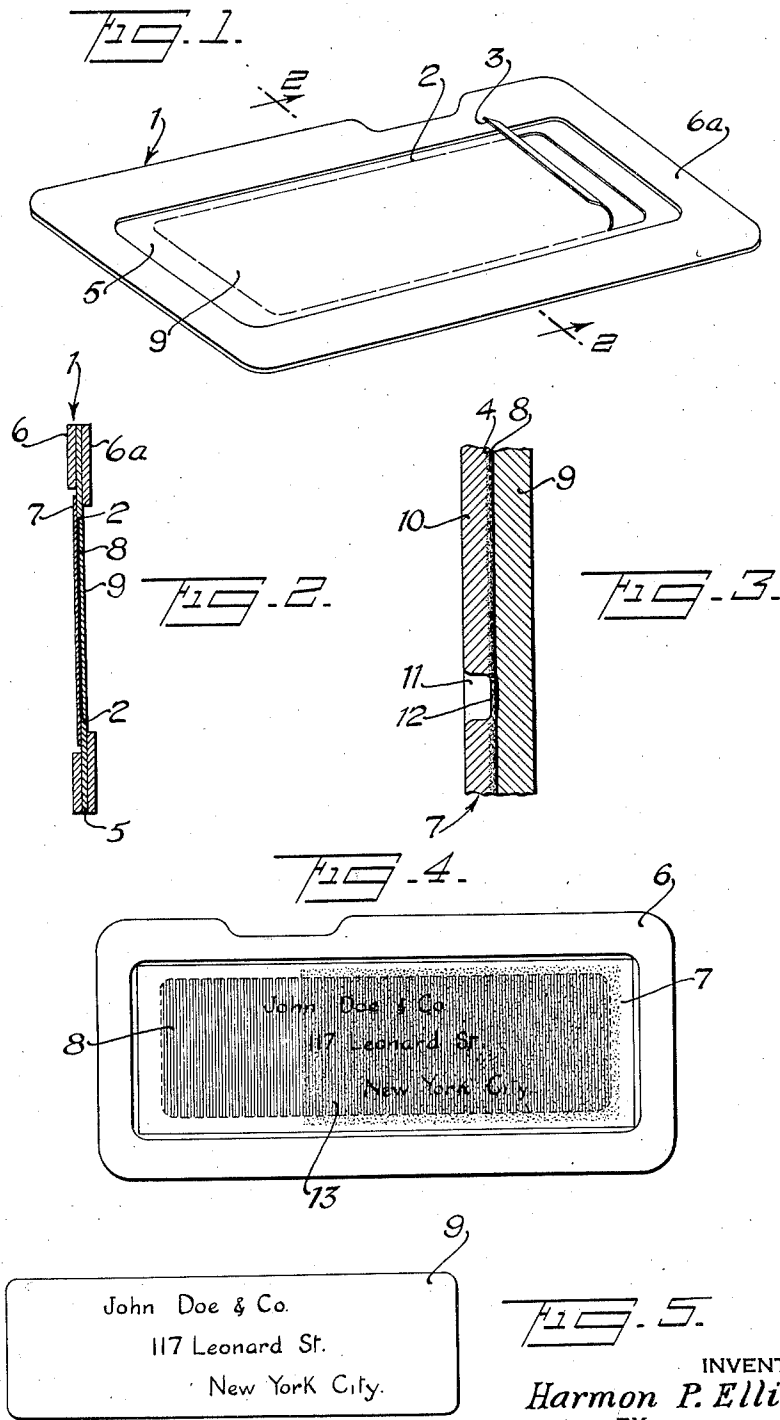
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COLORED STENCIL AND METHOD OF MAKING SAME

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COLORED STENCIL AND METHOD OF MAKING SAME

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The present invention relates to stencils made of coated Yoshino paper, or like loose fibred fabric, and its main object is the rendering of the legend or design cut or indented in the coating of such stencil more easily read, both before and after the stencil has been inked.

To this end the invention comprises a stencil blank or sheet having a film of coloring matter of the proper character to render it pervious to ink after having been crushed by type blows and/or removable wholly or in part by such blows on that side which I will call its back, and the stencil formed therefrom by indenting or cutting a legend or design in the coating on the face of the loose fibred fabric which forms the base of such stencil sheet.

In some aspects the present invention is an improvement on, or modification of, that described and claimed in Patent No. 1,645,593 granted October 18, 1927, to Erwin A. Geiger, in that a coloring material of the character there described is preferably used.

Both inventions are primarily designed for use on stencil sheets or blanks made of Yoshino paper coated with a coagulated film of a composition having a gelatine base, such as have been generally used in the paper stencil art for 20 years. The coating of such stencil sheets or blanks is generally done by drawing the sheet of Yoshino paper across the surface of a bath of the coating liquid. As a result the major portion of the coating material is left on the under surface of the paper, while only a minor portion soaks into the paper and through it to the other surface. After the coating material has been allowed to set on the Yoshino base it has a glassy surface and the coated sheet is slightly transparent, having an approximately white color. In cutting, or forming, the stencil from such a sheet or blank it is placed in a typewriter with the more thickly coated surface presented to the action of the type, or if the stencil is made by a stylus the marking by the stylus is done on the same surface, which, for brevity's sake, I will call the front of the stencil sheet, the more thinly coated surface being called the back.

Stencils made in the above described manner in the shape of small cards are, and have been, for 20 years used extensively in addressing machines, and in such use particularly it is important that the legend cut in the stencil in this manner shall be legible to the user both while being cut on the typewriting machine and afterwards during all periods of use so that he can tell the name and address that will be printed therefrom in the

addressing machine, and make any necessary corrections before the stencil goes into use. Such stencils as heretofore have been made out of the nearly white coated paper are slightly legible because the bottom surfaces of the indentations formed by the type are white, or at least more nearly white than are the remaining, unbroken or uncrushed surface portions of the sheet. This may be due to the type blows breaking up the smooth glassy surface of the coating and crushing the material under its face to a compacted fine white powder or granular mass, this effect being of the same character as that produced when a sheet of glass which is transparent is crushed and forms a white powder which is opaque. The result is also similar to that produced by "frosting" a glass surface. Whatever the true explanation, the fact is that the portions of the surface of the stencil paper which have been struck by the type appear more nearly white to the eye than the other portions of the sheet surface, which is usually slightly gray in tint. The difference between the white, opaque surfaces of the impressed characters and the nearly white glassy and slightly transparent surface of the remainder of the sheet area is, however, only slightly noticeable and the desirability of a stencil card for addressing machines which can be more easily read has long been recognized. In the effort to increase the legibility, the entire coated sheet has been impregnated with dye or the coating material has been tinted before it was applied to the sheet, but then the color of the letters remains substantially the same as that of the other surface portions of the sheet. The Geiger patent above mentioned marked a step in advance by proposing to use an alcohol dye, or one in a similar non-acid vehicle which would not permeate the entire coating of the paper, but would only mix with the surface portions thereof; and by also proposing to further limit the dyed zone by mixing such dye with shellac which would adhere to the surface, rather than permeate far into the interior of the coating layer. But Geiger proposed to apply such dye solution to the front of the stencil sheet and relied on the dispersive effect of the type blow on that surface to force the greater portion of the dyed layer of coating laterally away from under the type face, so that the undyed fibre and residual, undyed coating material beneath would appear, but this dispersion does not occur in practice to the expected extent, and the Geiger invention has not yet gone into commercial use, so far as I am advised. I have discovered, however, that if a film of

coloring matter pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows of the proper shade and of the general character described in said Geiger patent be applied to the back of the above described stencil blank, the legibility of the stencil produced therefrom is greatly enhanced. I have obtained the best results with a red or orange dye. Such a coating on the back of the stencil blank clearly shows through the slightly transparent coated sheet, when viewed from its front side, and after the type blow has crushed down the portion of this transparent coating beneath it and which has not been pushed away laterally in the operation of cutting the stencil, and has transformed it into a thin but opaque white mass through which the coloring material behind it cannot be seen, the sharp contrast between the white lettering so produced and the red or orange or other relatively dark color showing through the surrounding, unbroken, still slightly transparent coating makes the legend stencilled readable with ease.

If, also, the removable backing panel for a stencil card blank described in my Patent No. 1,909,913, dated May 16, 1933, be used an additional advantage results from the fact that a portion of the dyed layer on the back of the card is offset on the backing panel, so that after the latter has been torn from the stencil card it can be used as a proofing strip. A similar offsetting would have occurred on any backing sheet used when forming a stencil sheet on a typewriting machine.

Also stencils made according to the present invention are more legible after being inked than are stencils not so made.

One form of stencil card made in accordance with the present invention is illustrated in the accompanying sheet of drawing in which

Fig. 1 is a perspective view of the stencil blank looking at the back thereof.

Fig. 2 is a cross section on line 2—2 of Fig. 1.

Fig. 3 is an enlarged detail cross section of the stencil sheet with certain of the dimensions exaggerated for clearness.

Fig. 4 is a front view of the stencil, to the back of which a film of red dye has been applied, and the right hand portion of the face of which has been inked, and

Fig. 5 is a face view of the backing panel removed.

Throughout the drawing like reference characters indicate like parts. 1 indicates the frame of the stencil card generally which in the form shown is composed of a back frame section 6a and a front frame section 6 between which the intermediate sheet of paper 5 has been cemented or pasted. 7 represents a stencil sheet preferably of coated Yoshino paper, the edges of which have been pasted to the sheet 5. A panel 9 has been partly cut out from sheet 5, being outlined by lines of perforations or slits indicated at 2, 2, and having one end free to form a tab 3 by which it may be readily torn off, the above described construction being that shown and described in my said Patent No. 1,909,913 above mentioned. This latter feature, however, may usually be omitted, as such backing panel, being hygroscopic while the coated sheet is non-hygroscopic, the former is liable to absorb moisture, swell and buckle so as to form blisters.

The stencil sheet 7, as shown in exaggerated form in Fig. 3, is composed of the sheet of Yoshino or other loose fibred fabric 4, which has been

coated with a coagulated, slightly transparent film 10 by drawing the paper across the surface of a bath of such material in liquid form, with the result that a major portion of the coating is deposited on the under side of the paper sheet 4, a minor portion soaking into the paper and through to the other side to form a thin film on said other side. 8 represents the film of coloring material applied to the back of the coated sheet by drawing the sheet across the surface of a bath of the coloring material with the back of the sheet in contact with the surface of the bath or by any other proper method such as painting or rolling it on. 11 represents an indentation produced by the blow of a type which has pushed the greater portion of the coating 10 on the face of the sheet to one side or the other and crushed the remainder beneath it to form a depressed surface 12 which may expose a portion of the fibres of the Yoshino paper 4 beneath it, and has been rendered more perfectly white, but opaque, by such crushing, as above explained.

If a dark red or orange color dye is used, the color will show clearly through the slightly transparent coated sheet 7, while the bottoms of the type indentations 11 will be formed of opaque coating material which has been crushed and thereby given a nearly pure white surface which contrasts sharply with the red or orange or other relatively dark color showing through the uncrushed portions of the coated sheet. Any exposed Yoshino fibres are also usually white.

In Fig. 4 at the right hand I have indicated at 13 an area of the front of the stencil card which has been inked. The film of ink usually of a blue black tint is so thin on the smooth surface of the coated paper that it does not entirely blank out the red or other contrasting color beneath on the back of the stencil, but the effect on the eye is that of a sheet having a color between blue and red or other contrasting color, if dark blue ink has been used. On the other hand, a larger quantity of the ink is absorbed per unit of area by the type indentations, so that the legend typed upon the stencil blank appears in a color substantially that of the ink used, which is contrasted quite clearly with the composite tint of the rest of the front of the stencil produced by the combination of the red or other backing of contrasting color and the dark blue ink film on the front.

Probably more ink is deposited in the type indentations than on the smoother surfaces of the coated sheet because of their depressed level, (which produces an intaglio effect) and also because of the greater absorptive power of the broken surface portions which have been bruised by type blows.

Other forms of coloring matter pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows might be substituted for that above described, if such substitutes would not permeate the entire coating of the Yoshino, or, at least, not penetrate so deeply into it as to color the bottom surfaces of the type indentations on the other face of the sheet.

Preferably, to produce the best results, the absorptive capacity of the coating layer, and the penetrating power of the applied dye or paint solution, should be so related that the color will not extend to the front surface of the Yoshino paper.

While I have here shown the area of the colored film as co-extensive with the window opening in the broader frame section 6a, it might be

greater or less than that, and if the coloring solution were applied to the entire surface of a large sheet of coated paper before it was cut up to form a plurality of smaller stencil blanks such as here shown, the area of the coloring film on each stencil card would then be coextensive with that of the strip 4, of coated paper. Also such larger sheets if made in accordance with my invention could be used in printing apparatus designed to cooperate with them for duplicating purposes. In such case a considerable portion of the advantageous results hereinabove described would also be realized.

I prefer to use for the purposes here described coloring matter of a mineral nature, such as coal tar derivatives which are held in solution or suspension by an alcohol vehicle and mixed with shellac, so that the coloring film created by such mixture has somewhat the nature of a colored varnish applied to the back of the coated Yoshino sheet, with a considerable portion of the coloring matter remaining on that surface thereof instead of penetrating any considerable distance into the interior of the coating proper. As a result each type blow received in cutting the stencil causes a portion of this coloring material, or colored varnish, to crack off and adhere to the backing sheet 9, thus offsetting the stencil legend thereon, as indicated in Fig. 5. This does not diminish the legibility of the stencil but does produce a legible proof slip which may be filed or put to other use. I am aware that it has been heretofore proposed to use a separate colored backing sheet when sheet stencils are being cut on a typewriting machine, but such separate colored sheet is, and has to be, removed before the stencil is used, for the very obvious reason that such separate sheet is impervious to ink. Consequently, after the stencil has been cut on the typewriting machine and removed from association with the colored backing sheet, its legibility is destroyed, and this condition persists before and while it is being used in stencilling, or is in the files or is being inspected to determine whether it should be used. Therefore the main advantages of my present invention are totally lacking when such prior art procedure above referred to is employed. All these advantages on the other hand persist with the use of my present invention during the entire life of the stencil, which may endure for years and include 100,000 repetitions of use of it in printing operations.

Having described my invention, I claim:

1. As a new article of manufacture, a composite sheet for making stencils comprising a base of loose fibred fabric, a coating for said fabric adapted to be partially displaced and the remaining portions crushed to an opaque condition by type pressure, the major portion of which coating is on that surface of said fabric to which the type pressure is to be applied, and a film of coloring matter pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows extending over the other and more thinly coated surface of said fabric.

2. As a new article of manufacture, a composite sheet for making stencils comprising a base of loose fibred fabric, a coating for said fabric adapted to be partially displaced and the remaining portions crushed to an opaque condition by type pressure, the major portion of

which coating is on that surface of said fabric to which the type pressure is to be applied, and a film of coloring matter pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows extending over the other and more thinly coated surface of said fabric, said composite sheet being slightly transparent so that the portions of the front thereof not crushed by type blows also appears to be colored by reason of the color showing through the body thereof.

3. An article of manufacture such as is defined in claim 2 in which said coloring matter is suspended in an alcohol vehicle mixed with shellac.

4. An article such as defined in claim 2 in which said coloring matter has not penetrated said coating as far as the other surface of said base fabric.

5. An article such as defined in claim 1 in which said coating material has the quality of being rendered opaque by the crushing action of type impressed on its surface.

6. A paper stencil comprising a sheet of Yoshino paper saturated and coated with a solution forming a slightly transparent body when set, and a film of dark coloring matter pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows formed on one surface of said sheet, while the other surface thereof has limited opaque areas contrasting with said colored film and outlining the matter to be stencilled; whereby said outlined matter is rendered clearly legible by said contrast with said colored film as a background.

7. A stencil such as defined in claim 6 in which the major portion of said coating is located on the surface bearing said limited opaque areas and the latter are indented therein.

8. A stencil such as defined in claim 6 in which said opaque areas are substantially white in color.

9. The herein described method of rendering more legible a stencil composed of a sheet of Yoshino paper having a slightly transparent coating capable of being indented or crushed by type blows, which comprises applying to one surface of said coated sheet a film of coloring matter pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows which will not penetrate far below said surface, and indenting the legend to be stencilled by type blows on the other surface.

10. The herein described method of producing a legible stencil which comprises applying to one side of a sheet of loose fibred paper a semitransparent coating which is capable of being broken down and rendered opaque and partly displaced by the blows of the type of a typewriting machine; applying to the other side of said coated sheet a film of colored material pervious to ink after having been crushed by type blows, and/or removable wholly or in part by such blows which will penetrate only part way through it; and indenting the legend to be stencilled by type blows against the first mentioned surface; whereby the colored film shows through all portions of said typed sheet except the opaque areas produced by the type blows, the latter appearing in sharp contrast with such colored background, and permitting ink to pass therethrough when the stencil is used for printing said legend upon the surface of an article placed beneath it.

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