

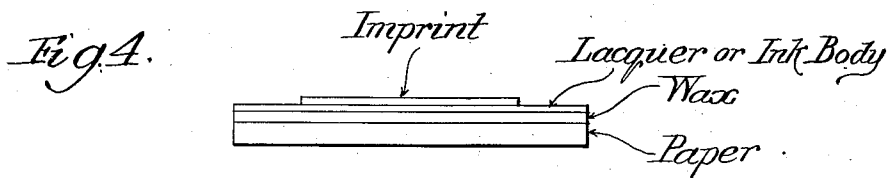
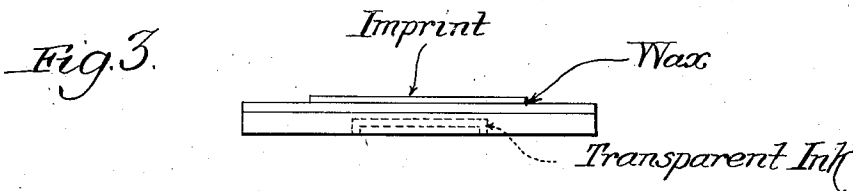
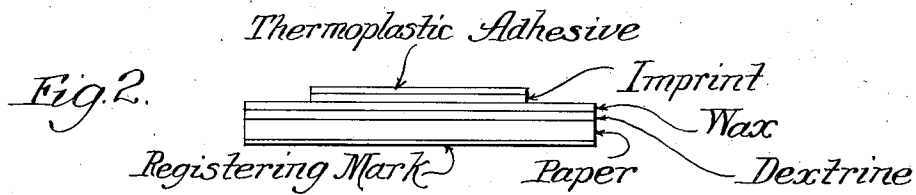
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DECALCOMANIA

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## UNITED STATES PATENT OFFICE

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## DECALCOMANIA

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6 Claims. (Cl. 41—33)

This invention relates to a decalcomania and more particularly to a decalcomania in which it is not necessary to use a liquid to release the transfer.

5 An important object of this invention is to provide a decalcomania which may be employed to deposit upon a surface a transfer consisting of the print alone. A further object is to provide a decalcomania transfer which has substantially  
10 no supporting body other than the printing ink itself, thus rendering it impossible to remove the transfer. A further object is to provide a decalcomania in which the transfer may be released without the use of water and in which one transfer  
15 of the sheet containing several transfers can be readily released without affecting the other transfers. Another object is to provide a decalcomania in which the transfer may be released by the application of heat. A further object is to  
20 provide effective means for identifying the product in the transfer-releasing operation. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in preferred embodiments by the accompanying drawing in which—

Figure 1 is an enlarged side view in elevation of a decalcomania embodying the broad idea of my invention; Fig. 2 is a similar view of a modified  
30 construction; Fig. 3 a similar view of another modification; and Fig. 4, a similar view of another modification embodying my invention.

In the simple form of the invention illustrated in Fig. 1, I employ a paper base which may consist  
35 of a standard sheet of book paper with a smooth even finish. This may be coated, if desired, with the usual dextrine or starch coatings, etc. Upon the coated paper is placed a layer of heat-responsive releasing material such as wax.  
40 I have found that a layer of hard wax with a melting point of 190–220° F. is satisfactory. I prefer to add to the wax a small amount of rosin or resin to provide anchorage. The wax coating may be transparent or opaque as desired.

45 Upon the wax layer, I form an imprint. The wax coating permits printing of the transfer film with standard printing equipment such as offset or letter press, etc. It permits the use of printing equipment which cannot be employed with the  
50 ordinary decalcomania water-release transfer body.

The ink to be used in forming the imprint is preferably of an oil base, strong color, and firm drying qualities. It should contain the necessary  
55 materials or vehicles to fit it for the particular

press conditions employed. To the ink may be added sufficient gums or resins or rosins to cause adhesion when heat is applied thereto.

In the use of the decalcomania as shown in Fig. 1, the imprint is placed against the object or surface to which it is to be applied and heat is applied to the rear surface of the paper. At the same time, the heating instrument may be pressed sufficiently against the paper to cause the imprint to be firmly brought into engagement  
10 with the surface to which it is to be affixed. I have found that the heat supplied by an ordinary 100 watt light globe is sufficient to release the transfer. When heat is applied to the paper and the imprint is pressed against the desired surface,  
15 the wax layer melts while at the same time the imprint is caused to adhere to the surface. When the paper and heating instrument are removed, the imprint will be found to be firmly and evenly united to the surface. Such an imprint,  
20 since it has practically no body except the materials forming the print, makes removal for re-use an impossibility. Since the wax is absorbed by the paper upon application of heat, the use of opaque wax does not impair the legibility of the  
25 imprint.

In the broad phase of my invention, as described above it will be seen that by the use of three elements namely, a paper base, a wax layer, and an adhesive imprint, it is possible to form a  
30 decalcomania transfer without a supporting body. It will be understood, however, that the invention may be employed in a variety of other forms and with different results or effects. For example, the imprint may be secured to the surface by a  
35 separate layer of adhesive over its face, such as a thermoplastic adhesive. Or, if desired, a lacquer body or ink body for supporting the imprint may be formed over the wax layer. The melting of the wax would thus release the lacquer or ink  
40 film carrying the imprint. Also, various means may be employed for identifying the product by the use of transparent ink in the paper or by the use of a chemical indicator in the transfer film, etc.

In the illustration given in Fig. 2, I have shown  
45 a paper base covered with a coating of dextrine. Any other suitable coating may be employed. For example, a vegetable gum such as dextrine or starch mixed with water in suitable proportions may be combined with an emulsion of wax  
50 and preferably an emulsion of vegetable wax such as Japan wax or a dispersion of the same which can be held stable in the heavier body of dextrine or starch. Enough of the above coating is ap-  
55

plied to the sheet to provide an even smooth surface to the paper and also to act as sizing to prevent the second coat from penetrating the paper, the second coat consisting of a hard wax having a melting point approximately of 190-220° F. While I prefer a wax having this melting point, it is possible to use waxes of other melting points when the wax is compounded with other materials. To the preferred hard wax just mentioned, I prefer to add a small amount of rosin or resin so as to provide anchorage to the gum coating under normal conditions. The wax coating may be transparent, opaque, or of any other desired color effects.

The paper formed as just described may be delivered to the printers for printing thereon designs suitable for tax stamps etc., such as, for example, squares, circles and other shapes, the designs being spaced apart so that they do not join when they are released. If desired, the back of the paper may be provided with marks registering with the designs so that the user will know that a design is directly opposite a mark shown on the back of the paper.

The wax coating permits the use of standard printing equipment for forming the film. Any suitable ink may be employed. If desired, a heat-resistant ink may be used. I prefer an oil base ink of strong color and with firm drying qualities and containing the necessary materials or vehicles to fit the particular press conditions.

After the imprint has been made and while the ink is still in a tacky state, fine powder is dusted on the surface, the powder consisting of a mixture or flux containing a rosin, a wax, a resin, a hard and soft gum. For any of the above there may be substituted various materials such as, for example, gum quaiac, gutta percha, rubber compounds, pitch asphalt, etc. This treatment gives the ink imprint an adhesive character which enables it to cling to the surface.

If desired, a separate adhesive film may be formed over the imprint. For example, the ink film may be allowed to dry and then over the film may be imposed a second imprint registering with the first and consisting of thermoplastic materials made in suitable form for applying with a printing press. Such a compound may be formed by mixing 10 parts of soft resin with 75 parts of hard resin and 15 parts of carnauba wax.

The application of heat to the back of the paper, by use of a lamp bulb, etc., causes the wax layer to melt and the thermoplastic adhesive to cling to the surface against which it is pressed. The thermoplastic adhesive bonds the imprint to the surface as soon as the imprint is released by the wax. The imprint is preferably in reverse in order that it may be in positive form when held by a thermoplastic adhesive upon the surface.

In the illustration shown in Fig. 3, I prefer to imprint the paper with transparent ink of a well-known composition. When heat is applied to the back of the paper, the wax melts and permeates the paper except as to that portion which is covered or partially covered with transparent ink. The result is that dark areas are formed where the wax permeates the paper while light areas appear where the invisible or transparent ink prevents the flow of wax. Thus, upon the application of heat, the designs formed by the transparent ink become visible. It will be noted that the disclosure of the formerly visible designs is simultaneous with the operation of applying the imprints.

In the modification shown in Fig. 4, a layer of lacquer or ink is formed over the wax and an imprint is formed upon the lacquer or ink layer. With this construction, a supporting body is provided for the imprint. The body may be transparent or translucent. If desired the imprint may be made by heat-resisting ink and it may be covered by a thermoplastic adhesive. The paper may be covered with a vegetable coating of gum, etc.

If desired, the layer of thermoplastic adhesive or flux, as illustrated in Fig. 2, may be opaque or of other suitable colors so as to provide a background for the imprint and thus causing it to stand out in contrast.

While I have suggested the use of a light globe as being satisfactory for releasing and applying the transfers, it will be obvious that other suitable means may be employed also. If desired, the light bulb may be provided with a metal guard for applying the heat more uniformly to the back of the paper and for pressing the adhesive face of the transfer evenly against the surface. It will be understood that for different types of heat-applying instruments, a considerable variation in the type of heat-releasing waxes or other materials may be made.

Chemical indicators may be used in the decalcomania. By way of example beta naphthol dissolved in alcohol, may be used in the transfer or imprint. In order to dissolve the beta naphthol it is preferable first to mix it with potassium-hydroxide and then dissolve in alcohol. In order to test the above fixed indicator in the transfer, I use a small amount of a dye salt dissolved in alcohol. There are a large number of indicators known to the trade which may be used.

My new decalcomania is believed to be the first to apply the printing film itself, without the aid of a transfer body, to a surface. This construction makes the transfer an ideal tax stamp because there is no possibility of the film being removed or re-used. It avoids the use of water. It reduces the spoilage of stamps and permits any quantity of stamps to be affixed without loss because the heat is applied only to the marked areas behind the stamps that are to be released. The film imprint is so delicate in construction that it makes re-use of the film impossible. The flux or adhesive on the face of the film, causes the film to stand out more clearly in contrast when the positive side of the imprint is exposed. The positive face of the stamp is protected by its contact with the wax layer and up to the time that the wax layer is melted.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

I claim:

1. A decalcomania transfer comprising: a paper base, a heat-responsive release coating thereon, an imprint carried by said coating, said imprint containing a material which will change color on the application of a suitable re-agent.

2. A decalcomania comprising: a paper base, a coating thereon comprising dextrine mixed with a vegetable wax emulsion, a hard wax layer over said dextrine and vegetable wax coating, an imprint upon said wax, and adhesive on said imprint.

3. In a decalcomania of the character set forth, a paper base, a heat-responsive release coating

thereon, a plurality of separable transfer bodies mounted on said coating, imprints on said transfer bodies, and indicator marks on the opposite side of said paper base, each of said marks being transversely aligned with a transfer body on the opposite side thereof.

4. A decalcomania transfer comprising: a paper base, a heat responsive release coating thereon, and an imprint on said coating, said imprint containing a small amount of beta naphthol.

5. A decalcomania transfer comprising: a paper base, a coating thereon comprising dextrine mixed with a vegetable wax emulsion, a hard wax

layer over said dextrine and vegetable wax coating, and an imprint upon said wax.

6. A decalcomania transfer comprising: a paper base, said base having areas covered with transparent ink repellent to wax, a layer of wax over the surface of said paper base including the area covered with transparent ink, and an imprint carried on said wax, said wax when melted being adapted to penetrate said paper except as to those areas covered by said ink and being adapted to release said imprint.

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