Feb. 7, 1950 C. WITTGREN 2,496,325

TRANSFER

Filed Oct. 16, 1948

Fig-1

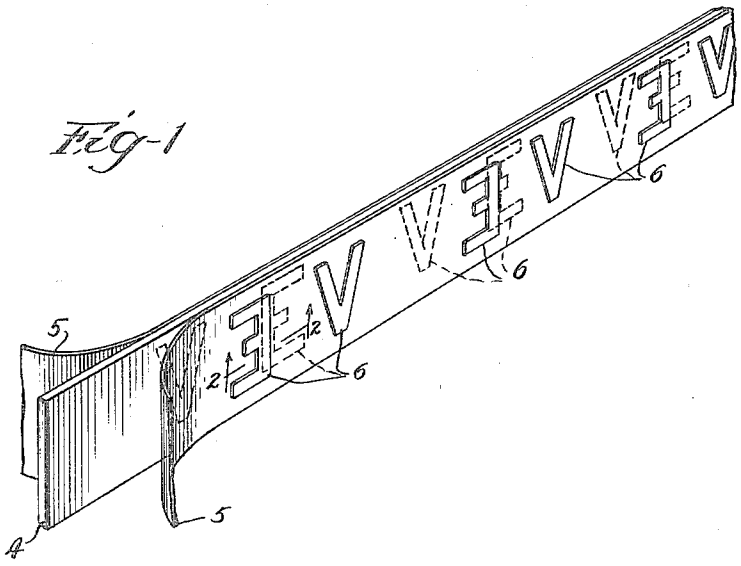
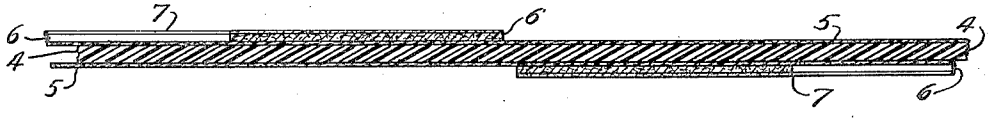


Fig-2



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UNITED STATES PATENT OFFICE

2,496,325

TRANSFER

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9 Claims. (Cl. 154—46.8)

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This invention relates to transfers, and has as a primary objective the provision of a transfer sheet which has numerous and important advantages over decalcomanias and similar transfers used heretofore. In particular the invention seeks to provide a unique transfer sheet which may be handled and stored with ease, which greatly simplifies the task of accurately transferring an image from a transfer sheet to a predetermined position on the desired surface, and which accomplishes these results at a great saving in cost as compared to the image transferring devices and procedures used at the present time.

In my copending application Serial No. 773,852, filed September 13, 1947, which, insofar as consistent herewith, is made part of the present disclosure by reference, there is disclosed an image transferring device which includes a preferably transparent non-fibrous, flexible, water impervious and water repellant or hydrophobic base sheet, a coating thereon of a film forming material which is incompatible with the material forming the base sheet, an image of lacquer, pigment, paint or ink applied to the film, and an adhesive applied over and in register with the image—which adhesive is preferably one which requires a remoistener that does not dissolve the image-bearing film. While the composite transfer sheet described in the aforesaid copending application is an outstanding advance over the transfer devices heretofore in use, the present invention provides a transfer sheet which is a still further improvement over those used heretofore.

The important and numerous advantages of my invention will become apparent in the light of the following disclosure taken in conjunction with drawings in which:

Fig. 1 is a perspective view showing one side of a preferred form of the invention; and

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1.

The transfer sheet of the present invention, generally, comprises a flexible base sheet 4 formed of light permeable material, coated on both sides with a flexible film 5 of material which has substantially no chemical affinity for the base sheet material, images 6 applied to both sides of the film-coated base sheet, and an adhesive 7 applied in register with and over the images.

In its preferred form the invention comprises a smooth-surfaced, flexible sheet of cellulose acetate which is coated on both sides with a film of polyvinyl alcohol. Applied to both sides of the film-covered cellulose acetate base sheet are

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built-up lacquer images which have their outermost surfaces coated with a substantially water insoluble adhesive. The solvent or carrier for the image forming material, as well as for the adhesive, is preferably one which has no solvent effect on, and substantially no chemical affinity for, the film formed on the base sheet.

While cellulose acetate is a preferred base sheet material because of its relatively low cost and its non-inflammability, it is to be understood that other plastic as well as non-plastic materials having properties similar to cellulose acetate may be used. In this connection I have found that the vinyl resins, styrene resins, polyethylene and nitrocellulose are entirely suitable and quite satisfactory for this purpose.

For the film-forming material I may use, beside polyvinyl alcohol, any other similar material which may be applied to the base sheet to form thereon a thin, flexible, tough layer or film which has substantially no chemical affinity for the base sheet material, and which is preferably water soluble or hydrophilic, such as, for example, sodium carboxy methyl cellulose, and methyl cellulose.

The images applied to both sides of the film-coated base sheet may consist of materials other than lacquers, such as pigments, paints, inks, and the like, provided that the solvent or carrier therefor does not dissolve or have any chemical affinity for the film, as hereinbefore mentioned.

The adhesive applied over the images may be any one of the common water insoluble adhesives used for such purposes, and which are prepared for use by remoistening with toluene or similar solvents.

In preparing a preferred embodiment of my invention, I take a flexible sheet of cellulose acetate and dip it at room temperature in a water solution of polyvinyl alcohol, which contains about five to fifteen per cent, preferably about ten per cent, of polyvinyl alcohol. I then remove the sheet from the solution and hang it up to dry at ordinary room temperature and humidity until the sheet is dry to the touch. Exposing the dipped sheet to the temperature and humidity conditions normally present in dwellings produces a satisfactory, sensibly dry film within about an hour. If desired, the drying time may be considerably reduced by the use of drying tunnels and the like, as is well known in the art. The resulting film is quite thin, being of the order of 1/1000th of an inch in thickness, or even less, and should be at least thick enough to serve adequately as a temporary support for the image but

not so thick as to require an excessive amount of time to dissolve in water after the image transferring step. I then apply the desired image or images, preferably lacquer images, to both sides of the film-covered cellulose sheet. Obviously the polyvinyl alcohol film may be applied by commercially available coating machines and driers, if desired.

The types of images used and the manner of their application are as described in my hereinabove mentioned copending application, except that, as noted above, the images are deposited on both sides of the film bearing sheet to provide a two-sided transfer. The image depositions may be made on opposite sides of the sheet simultaneously, or they may be applied first to one side of the sheet, allowed to dry, and the additional images placed on the opposite side of the sheet. Suitable adhesives, such as described in my aforesaid copending application, are then applied to the images, whereupon the resulting two-sided transfer sheet is ready for use.

In applying the transfer to a permanent support surface, the required remoistener is applied to the adhesive or to the permanent support surface, and the transfer put in place on the permanent support surface, which can readily be accomplished because of the transparent character of the transfer. The transfer is then firmly pressed against the support and squeezed or rolled to remove air bubbles and to insure good adhesion of the image to the permanent support surface. If desired the base or casting sheet may thereafter be immediately stripped from the film, leaving the image with its film support on the permanent support surface. It is usually desirable to slightly separate one corner of the base or casting sheet from the film prior to the application of the transfer to the permanent support surface in order to facilitate the stripping action. After stripping, if any further squeezing or pressing of the image to the permanent transfer surface is required, it may be done at this time. The film is then quickly and easily removed by sponging or washing with water (in which it dissolves), leaving an open image transfer on the permanent support surface.

It is evident from the aforesaid description and disclosure of my invention that the two-sided transfer, whose characteristics and whose preparations I have described, possesses numerous advantages over other image-transferring devices of this general type, and particularly the advantages stemming from the "non-curl" features of the sheet which expedite the rapid application of the transfer to the image-receiving surface, the light permeability of the base sheet and of the image carrying film which makes possible the accurate positioning of the image on the ultimate image-receiving surface, the self-supporting qualities of the image-carrying film combined with the characteristic which permits this film to be readily stripped from the base sheet by mechanical means only, and the absence of any substantial chemical affinity between the image-carrying film and the other elements of the transfer, which permits the film to be selectively dissolved without dissolving or softening the base sheet, the image or the adhesive.

While I have described several particular embodiments of my invention, it is to be understood that these are for purposes of illustration only, and are not to be construed as limiting my invention except as required by the appended claims.

I claim:

1. A two-sided transfer comprising a flexible, light-permeable, smooth surfaced base sheet formed of a water insoluble organic plastic; a water soluble, light-permeable, flexible, mechanically detachable film of a water soluble organic plastic formed on opposite sides of said sheet, the said film bearing on its outer surfaces images formed of water insoluble material, the outer surfaces of said images bearing an adhesive thereon.

2. A two-sided transfer comprising a flexible, light-permeable, smooth surfaced base sheet formed of a light-permeable synthetic resin bearing on each side thereof a thin, flexible, light-permeable, mechanically detachable image-bearing film of a water soluble organic plastic, the said images bearing an adhesive on their outer surface.

3. A two-sided transfer comprising a base sheet formed of a light-permeable synthetic resin bearing on each side thereof an image-bearing film of polyvinyl alcohol, the said images bearing on their outer surface a water insoluble adhesive.

4. A two-sided transfer comprising a base sheet formed of a light-permeable synthetic resin bearing on each side thereof a mechanically detachable, image-bearing film of sodium carboxy methyl cellulose, the said images bearing on their outer surface a water insoluble adhesive.

5. A two-sided transfer comprising a base sheet formed of a light-permeable synthetic resin bearing on each side thereof an image-bearing film of methyl cellulose, the said images bearing on their outer surface a water insoluble adhesive.

6. A two-sided transfer comprising a base sheet formed of cellulose acetate, bearing on each side thereof an image-bearing mechanically detachable, light-permeable film of a water soluble organic material, the said images being water insoluble and bearing on their outer surface a water insoluble adhesive.

7. A two-sided transfer comprising a water repellant, light-permeable, flexible, smooth surfaced base sheet bearing on each side thereof an image-bearing, mechanically detachable film of a water soluble organic material, the said images bearing on their outer surface a water insoluble adhesive.

8. A two-sided transfer comprising a water repellant, light-permeable, flexible, smooth surfaced base sheet bearing on each side thereof an image-bearing hydrophilic film, the said images bearing on their outer surface a water insoluble adhesive.

9. A two-sided transfer comprising a base sheet formed of a light-permeable, hydrophobic synthetic resin bearing on each side thereof an image-bearing, light-permeable, hydrophilic film, the said images bearing on their outer surface a water insoluble adhesive.

CHARLES WITTGREN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
493,450	Schmalz	Mar. 14, 1893
861,025	Gribble	July 23, 1907
1,678,341	Kaber	July 24, 1928
2,060,105	Mullan	Nov. 10, 1936