Oct. 28, 1930. A. J. LAWS 1,780,021

PRINTED TRANSFER AND METHOD OF MAKING AND USING THE SAME

Filed Feb. 4, 1928

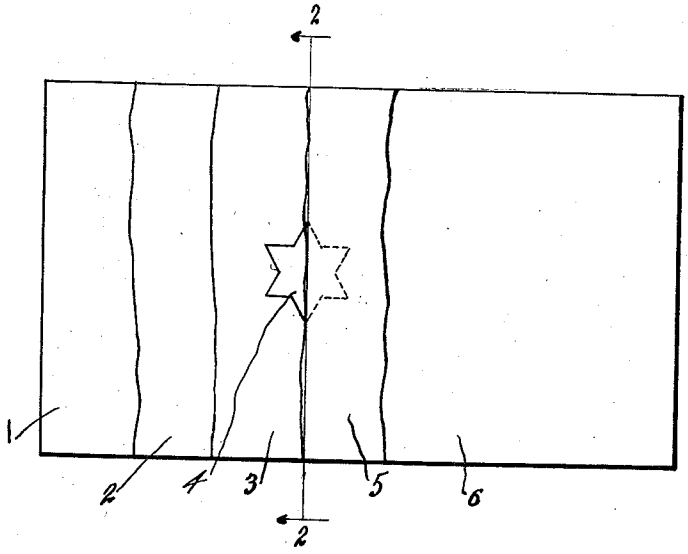


Fig. 1

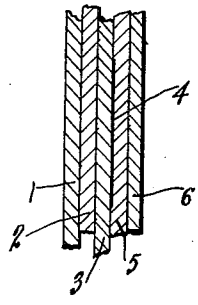


Fig. 2

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UNITED STATES PATENT OFFICE

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PRINTED TRANSFER AND METHOD OF MAKING AND USING THE SAME

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This invention as indicated relates to printed transfers and a method of making and using the same. More particularly it comprises the provision of a novel type of printed transfer suitable for application either to transparent or opaque bodies, being thus what may be termed "duo-usable", having improved appearance with respect to sharpness of line, and also having greater permanency of structure over transfers now in use. It also includes a method of preparing a printed transfer which will result in a design, the outlines and detail showing of which will be maintained at the maximum degree of sharpness while the transfer will be flexible and free from tendency to crack or separate. It further includes a method of selectively attaching the transfer to a transparent or to an opaque surface. It also includes the provision of a transfer having an opaque or a partially opaque coating whereby the printed matter will be shown to the best effect, particularly when the device is used as a transparency. It is to be understood that the term "print" or "printing" refers to deposition of pigment by means of printing, lithography, or other suitable methods.

Heretofore it has been the practise to place printed matter upon a celluloid surface, such surface being particularly adaptable to receive a design without causing blurring or distortion of the marginal outlines but in applying a permanent coating over such printed matter, there frequently has been used a coating which has a solvent action upon the ink and nitrocellulose base whereby the sharpness of the design has been modified through the impregnation of the printed matter through the coating medium. It likewise heretofore has been difficult to secure the maximum contrast in printed matter particularly in colored designs for the reason that no adequate background could be provided which was to a certain extent opaque and at the same time free of danger of cracking or splitting and thus marring the appearance of the transfer after a certain period of use.

To obviate the difficulties referred to, I have provided a nitrocellulose base preferably of transparent material adapted to receive a printed or lithographed design or like matter and to maintain the outlines thereof in sharp unblurred condition, and have added to such design a film or coating of flexible opaque or semi-opaque material which has no solvent action upon the pigment or the nitrocellulose base and which, therefore, maintains the original characteristics of the design in permanently sharp condition. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail a method of making and using a product exemplifying my invention, such disclosed procedure and product constituting however, but several of various applications of the principle of my invention.

In said annexed drawing:

Fig. 1 is a diagrammatic view of a laminated sheet forming one form of construction embodying the principle of my invention; and Fig. 2 is a fragmentary sectional view showing in enlarged detail the position of the base and coatings used in connection with my invention.

As is clearly shown in the drawing, the preferred form of my invention provides for the coating of a sheet of what is known as decalcomania paper, having a paper base 1 provided with a soluble adhesive coating 2, over which is applied a coating of nitrocellulose material 3 preferably in a thin transparent film. Upon this coating is applied the design 4 which may be of printed or lithographed matter applied in substantially the same way that such designs are applied to ordinary sheets of paper. After the design has been applied, there is placed over the design a coating or film 5 preferably of a varnish such as a combination of suitably pigmented gums with oils so as to give a high degree of opacity with a maximum flexibility. Such a coating may take various forms but it has been found that a satisfactory result is obtained by using standard commercial gum varnish thinned with linseed oil to a freely

running solution and pigmented by the addition of either zinc oxide or lithopone or equal parts of each in small quantity. The coating solution thus is substantially a white enamel. The transfer thus provided may be used in the usual manner of decalcomania transfers by rendering the exposed coating adhesive or by removing the paper base through immersion of the transfer in water until the soluble adhesive immediately adjacent the paper becomes dissolved and then sliding such transfer from the paper and allowing the adhesive beneath the nitrocellulose base to engage the surface to which the transfer is to be applied. The last mentioned operation is preferably used in connection with the application of the transfer to a window or other sheet of glass, the design becoming fixed thereto through the action of the soluble adhesive on such surface. This type of application of a transfer is usually designated a "slide-off".

If, instead of use as a transparency, the transfer is to be applied to an opaque object, it will be found desirable to use a coating of varnish upon the exposed varnish coat of the transfer and apply it directly to such opaque object, thereafter moistening the paper base of the transfer and removing the same from the adjacent nitrocellulose film or coating. The varnish coating may also be provided with a coating or film of suitable water soluble adhesive 6 which will serve as the attaching medium for application to an opaque object.

The method of making the transfers referred to comprises the steps of coating a suitable sheet such as decalcomania paper with a thin film preferably of transparent nitrocellulose and using the surface thus provided as a base to receive a printed, lithographed or similar design and thereafter applying over such design a thin film or coating of varnish, such varnish preferably being suitably pigmented and combining a high degree of opacity with a high degree of flexibility. The desired effect is one closely approximating a white enamel and this may be attained through combining a penetrating oil which is not opaque with a pigmented gum varnish having a high degree of opacity but ordinarily highly sensitive to injury through cracking, checking, and the like, A mixture of a pigmented gum varnish with suitable oils combines opacity with toughness and flexibility which, when applied, adheres closely to the nitrocellulose coating and provides a transfer exhibiting unusual durability and permanency of structure and displaying the design in sharp contrast against the opaque background. As has been indicated, the opaque background is preferably white but for various purposes, it will be understood, coatings variously tinted may be found to be desirable, and such changes in color may be readily provided for.

The method of using the transfer has been indicated above in connection with opaque objects or with glass. It should be stated, however, that when transfers are supplied with a soluble adhesive coating on the paper base and with a similar coating upon the opaque varnish coating that through immersion of the transfer for sixty or seventy seconds in water, it becomes available at once for selective application either to a glass or to an opaque surface, the nitrocellulose coating being secured against a glass surface, and the varnish coating against an opaque surface by means of the adjacent coating of soluble adhesive.

Other forms may be employed embodying the features of my invention instead of the one here explained, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether used or produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I therefore particularly point out and distinctly claim as my invention:

1. A method of producing transfers which comprises coating a removable base sheet with a water soluble substance, applying to the coated surface a nitrocellulose material, printing upon said material and coating said film and printed matter with a second solution having no solvent properties with respect to either said first film or printed matter to cause said ink pigments to be engaged between the transparent first coating and the substantially opaque second coating, said second coating forming a permanent part of said transfer.

2. An article of the character described, having in combination a removable base sheet, a coating of soluble adhesive upon one surface of said sheet, a nitrocellulose coating upon said soluble adhesive coating, a printed design upon said nitrocellulose coating and a protective coating non-solvent with respect to said nitrocellulose coating and design applied over said design and nitrocellulose coating forming a permanent part of the transfer.

3. An article of the character described, having in combination a removable base sheet, a coating of soluble adhesive upon one surface of said sheet, a nitrocellulose coating upon said soluble adhesive coating, a printed design upon said nitrocellulose coating, and a protective coating non-solvent with respect to said nitrocellulose coating and design applied over said design and nitrocellulose coating, said last-named coating comprising an opaque highly flexible composition forming a permanent part of the transfer.

4. A transfer print comprising a base sheet

having a removable coating forming film thereon which is insoluble in water, a design formed by pigments in superficial surfaceknit contact with said film surface and a second coating over said first-mentioned coating and not acting as a solvent with reference to said first coating to enclose the said design between said coatings, said second coating forming a permanent part of said transfer.

5. A transfer print comprising a design formed of ink pigments interposed between a film of nitrocellulose material and a film having no solvent properties with respect to said nitrocellulose material, said film forming a permanent part of said transfer.

6. A transfer print comprising a design formed of ink pigments interposed between a film of nitrocellulose material and a film having no solvent properties with respect to said nitrocellulose material, and having adhesive characteristics with respect to said pigment and first coating, said film forming a permanent part of said transfer.

7. A transfer print comprising a design formed of ink pigments interposed between a film of nitrocellulose material and a film having no solvent properties with respect to said nitrocellulose material, and having adhesive characteristics with respect to said pigment and first coating, said last-named coating having a high degree of opacity and flexibility, said second coating forming a permanent part of said transfer.

Signed by me this 27th day of January, 1928.

ARTHUR J. LAWS.