

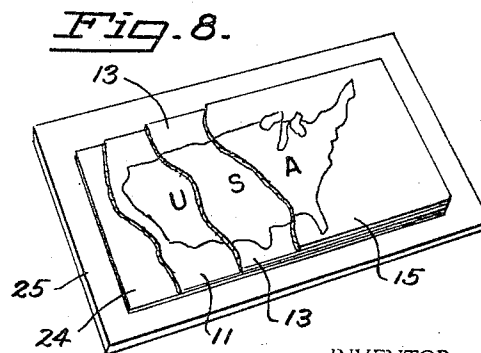
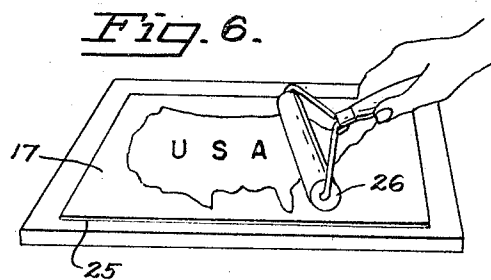
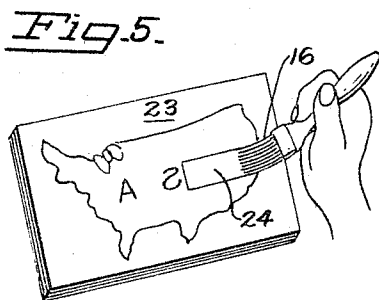
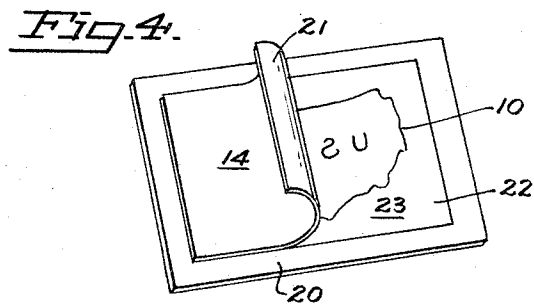
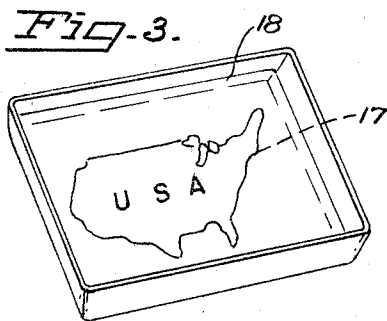
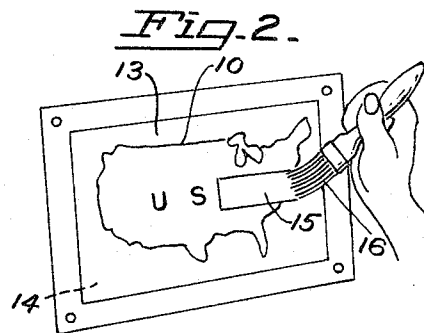
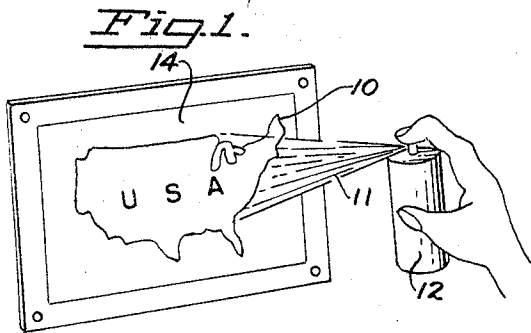
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3,334,003

IMAGE TRANSFER KIT AND METHOD OF USING SAME

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3,334,003

IMAGE TRANSFER KIT AND METHOD OF USING SAME

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This invention relates to the transfer of printed or painted images from paper to another backing. More specifically, it includes a process for transferring printed illustrations, photographic prints, posters, lettering, and original oil or watercolor paintings, whether black and white or multicolored, from a paper base to a new backing or base. It applies to lithographs, rotogravures, illustrations in magazines, and original artwork such as paintings on paper. It also includes a kit for practicing the process.

Prior-art transfer processes have usually been complicated and expensive and have usually required an expert or technician to perform them. They involved the use of many preparations and a variety of different chemical applications before and after the production of the finished transfer film, but still were unable to protect the ink or oil from chemical changes that occurred during the process and were also unable to lock the ink in its original position it had held on the paper backing. Hence, the end results of prior transfer processes have generally been poor in quality, and the original colors have generally been altered or have run or bled into each other. For example, decal-transfers have been made by coating the positive side of the image with a formula of glue, gelatin, or cellulose to form an adhesive, bodied film, without consideration to the fact that the applied chemicals reacted with the inks and changed their colors or caused them to run or bleed into each other, and also effected a physical change in the printer's pattern. The transferred picture was generally reversed from the position of the original subject. Other prior-art processes employed rubber bases, dissolved benzene, or other highly inflammable or toxic solvents, or used more difficult cellulosic films that required complex procedures employing excessive heat and pressure or employed dangerous caustic solutions to eat away the original paper backing.

One object of the present invention is to provide an inexpensive and simple process for transferring illustrations from lithographs, magazines, art prints, and photographic prints on paper, to such bases as canvas, wood, metal, glass, plastic sheeting, and pottery.

Another object of the invention is to provide for transfer of original watercolors and oil paintings from a paper base to another base, such as canvas, plastic, porcelain, and pottery.

Another object of the invention is to provide a transfer process capable of being performed without any previous training or instruction by amateurs, children, and others inexperienced in art work.

Another object is to provide a transfer process that can be carried out with prepared chemicals which are simple and safe to handle, being non-inflammable, non-toxic, and non-soiling.

Another object is to provide a kit for enabling an amateur to start with a printed reproduction of a painting and transfer that to a canvas backing or the like.

A further object is to provide a transfer process that is unaffected by the operator stopping his operations at nearly any point of the transfer process and starting them again at an indefinite later time, such interruptions not causing failure or loss of the end product.

Another object is to enable exact reproduction of the original, producing a transferred image that is not dis-

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torted in shape or in color. Moreover, the transferred image is positive; i.e., not a reversed or negative image (although if desired a reversed image may be reproduced by this invention). Still further, the transferred image has the same qualities of depth, color and line as the original.

A further object is to provide a process that enhances the original image. Thus, transfer to materials such as canvas and other textured mediums, or glass, may enhance the qualities of the original by adding dimension or by imparting transparency.

In this invention, the image on the original paper base is coated with a water emulsion of an acrylic polymer, preferably a particular novel composition explained later herein. The coating is dried, and then the coated sheet is soaked in water. After soaking, the paper base is peeled off, and the coating holds the image. The image is then coated again, usually on the back side and with the same composition, and is immediately applied to the new backing. This, broadly, is the process, but several refinements will be presented in the detailed description that follows, and other objects and advantages of the invention will also become apparent from this detailed description.

In the drawings:

FIG. 1 is a view in perspective illustrating the step of spraying a preliminary film-forming and locking substance on the original paper-backed subject, a printed map to be transferred.

FIG. 2 is a similar view of the step of brushing the main coating of acrylic polymer on to the original map print.

FIG. 3 is a similar view of the coated original immersed in a bath of water.

FIG. 4 is a similar view of the step of peeling the soaked paper backing from the coated image.

FIG. 5 is a similar view of adhesive coating being added to the reverse surface of the coated image.

FIG. 6 is a similar view of the step of applying the adhesive-coated image to a new backing such as canvas, held on a stiff supporting surface, showing the transfer film being rolled in firm contact with the canvas.

FIG. 7 is a similar view of an application of a transfer film to a rounded surface, such as a lampshade or wastebasket.

FIG. 8 is a similar view diagrammatically showing the layers or plies of material cut away one at a time. The thicknesses have been exaggerated.

Some consideration should be given to the paper and pigments of the original image to be transferred. It has already been stated that original watercolor or oil paintings on paper bases may be transferred, as may photographic prints. The types of paper employed for these images and the nature of pigments and colors are well known, and they give good results when used in this process. One of the principal uses of the invention, however, is that of transferring printed illustrations, such as color reproductions of good paintings, from the paper base on which they are printed, usually by offset lithography, to a canvas base. The invention also applies to the transfer of good magazine prints, especially such as appear on the covers of some magazines or in special inserts to them, the transfer being from this paper base to canvas or to mounting board or to a lampshade or to other desired bases. Consideration also should be given to what might be termed an ideal image for reproduction, such as might be furnished in a kit that could be sold for the purpose.

I have found that for such color reproductions the best results are obtained from paper that is rather heavily filled with starch, casein, clay or other fillers or binders.

Water dispersible sizing, such as starch or casein, helps in the step of separating the image from the paper. The letterpress papers used in the trade are good for this purpose; for example, Webberly Clark No. 70KC, which is used for offset printing on letterpress paper, is good, and the covers of some magazines on 80KC, which is used for letterpress printing on letterpress paper, are very good for this process. These papers are double glossed or sized on the front and back, and both of them use starch or clay binders to hold or form the body of the paper. In general practice, on one-side coated sheets the inks are printed on the so-called felt or softer surface, but I have found that if tacky inks are used, printing on the wire side minimizes lifting of the coated sheet, for the wire side has more body to resist the pull of tacky inks. For the purposes of this process, the weakening of the coating bond is an asset but is not essential. Regular offset printing and letterpress inks are very good. Quick-setting and high-gloss inks are especially good. The vehicles or solvents for these latter inks are released by evaporation and are not dependent on absorption by the paper, which used to be necessary in offset processes.

Under ideal situations for use in this invention, the print particles that form the image for transfer should set high on the paper rather than penetrating its surface to a marked degree. This is accomplished by the gloss or coated surface and by the starch, clay or casein filler or binder that holds the pulp in place.

High gloss inks often employ phenolic resins or phenolic-modified alkyd resins often in conjunction with synthetic drying oils. These give excellent results, especially since the more resistant the paper to penetration of the vehicle, the higher the gloss produced and the better and easier the reproduction or transfer can be. Similarly, quick-setting inks, which are fast drying by selective absorption, are very good. The vehicles are generally resin-oil combinations which, after the ink has been printed, separate into (1) a solid material which remains on the surface as a dry film and (2) a liquid which penetrates the paper or evaporates. These inks are most effective with coated paper in which their solid material is able to become dry very quickly, within a few seconds to a few minutes. Gravure-type ink can be used and so can regular printing ink, as has been said.

Some inks tend to bleed. Insofar as the choice of inks can be controlled, it is desirable to use those which have the least tendency to bleed. The red inks seem to be the most prone to bleeding, but Rhodamine reds (organic coal tar pigments) do not bleed in water, and they give excellent results for both letterpress and lithograph printing. Cadmium mercury reds or chrome colors are non-bleeding in many solvents and can be used. Body gums and binding varnish help in the lithograph inks, and Japan dryer is useful in certain types of absorbent papers.

Often, one can proceed immediately to the step of brushing on the acrylic water emulsion. This can be done when the inks have had a long time to cure and dry, that is, a minimum of several weeks and, in some cases, several months. However, in some instances such direct application of the coating film causes bleeding or running, especially where the inks have not had sufficient time to cure fully and also where there is a tendency for the inks to run and when original watercolors are to be transferred and where absorbent papers without sizing are used. As a general precautionary measure, although not always an essential one, it is a good idea to precede the coating step with the step shown in FIG. 1, where the printed or painted surface 10 to be transferred is first sprayed with a fast-drying dilute solution of acrylic ester resin 11, which may come from an aerosol packaged in a can 12. For example, to secure the color and form of the ink and oil particles before coating the main substance, I recommend a spray comprising the following aerosol or self-propelled formula.

Spray formula

Ingredients:	Percentages
Acrylic resin ester -----	5.25
Aromatic hydrocarbons -----	54.0
Halogenated hydrocarbons -----	40.0
Pigment silicates -----	0.75
Total -----	100.00

This dilute solution of acrylic resin ester is very effective. The halogenated hydrocarbon, which may be a Freon such as Freon 12, acts as the propellant to provide the force for the spray. If another spraying force is used, it may be omitted. The aromatic hydrocarbons provide the solvent for the acrylic resin ester and pigment silicates, which provide the solids content. The solution evaporates sufficiently quickly to flow onto and around the printed pattern of ink or, in other examples, around the oil particles of the artist's pigment, without changing them chemically or causing bleeding or running. It solidifies into a clear, transparent acrylic ester film 13 which is thin and flexible and which physically locks the ink particles or oil pigment within itself, adhering only superficially to the original paper backing 14, because of its limited penetration. The ink particles are thereby held in position and are ready for the application of the film-forming substance or coating which will capture them from the paper 14.

Acrylic ester is compatible with the gloss coating used in some reproductions, which is often a similar formula, and it is also compatible with the transfer coating. If there is a gloss coating on the paper, it helps the binder by its adhesive ability and becomes part of the transfer film which later separates from the paper 14. Being of the same acrylic type of makeup or compatible with it, it is a transparent, translucent film which aids in giving strength to the transfer film and becomes another lamination of it. This breakdown of the film for transfer is an interesting feature of the invention. If the image is printed on a gloss surface which has no developed or holding body for the transfer paper, then no peeling is necessary as the water bath washes away the paper body.

FIG. 1 shows an operator applying a spray 11 to an image 10 on a paper base 14. The image 10 happens to be a map of the United States, but it could be a color reproduction of a famous painting or could be an original water color. The spray 11 is applied very quickly, is thin, and is permitted to dry. This step may be done by the manufacturer of the painted reproduction or by the manufacturer of the kit. It may be done soon after the printing operation is completed.

At any time after the spray 11 has dried into its film 13 (or in those instances where the spray 11 is omitted) the main coating 15 may next be applied. As shown in FIG. 2, a coating 15 is being brushed onto the surface by a brush 16. If desired, the coating 15 could also be sprayed, or it may be applied by a roller.

The coating 15 is preferably a water emulsion of acrylic polymer to which has been added a suitable defoaming agent that prevents the formation of bubbles or the so-called "orange-peel" effect as the coating 15 dries. Thus, the emulsion may have a solids content (i.e., acrylic polymer) of about 46%, dispersed in water with the aid of a suitable nonionic emulsifier. In appearance, the coating liquid is white and milky. Typically, it has a weight per gallon of about 8.7 pounds, a pH of 9 to 9.8, a particle size of less than 0.1 micron, a molecular weight (of the acrylic polymer) of about 1.25×10^6 , an index of refraction of 1.48, a specific gravity of 1.09 to 1.15, and a Knoop hardness number of 0.8. The defoaming agent may be that of the Lam Patent No. 2,956,971, in the amount of about 0.2%, an amount I have found effective to prevent the formation of bubbles or "orange-peel" effect.

This coating material is brushed on rather thickly, and the entire picture surface is coated, including the

edges. It solidifies quickly, and within two hours the picture is ready for the next step, the coating 15 having then become nonabsorbent and insoluble in water, so that it will not be affected by the soaking operation. If desired, additional applications of the same or similar coating materials may be used to give added body to the coating 15, or the desired body thickness can be obtained by adding additional layers during a single application, or compatible sheets can be secured to the initial coating 15 by compatible adhesive.

These additional laminations may be applied to selected lines or figures of the original image or to any portion thereof, to simulate paint buildup and to extend the color dimension. Simulated artist "brush stroke patterns" may be created by brushing the coating while it is solidifying. The ability to do this is a factor which stimulates the artistic or craftsman instincts in even the most amateur operator and gives him a challenge, an interest in the work, for he can attempt to make the finished product look as much as possible like an original painting. This work is especially interesting in transferring good reproductions of oil paintings where the original was of the type in which brush strokes or pigment buildups were prominent. The effect of the color reproductions can be enhanced so that the copy looks much more like the original than did the print on paper.

After coating, the operator may wash out the brush 16 with warm water, retaining unused coating material for later use further on in this process.

When the coating 15 is dry, the white margin around the print (if present) may be trimmed off so that it will not appear in the final picture, and then the coated picture 17 may be soaked as shown in FIG. 3 by immersing it in a bath of water 18. If submerged in warm water 18 for about 30 minutes, the picture 17 will be ready for the next step.

After soaking, the picture 17 is removed from the water and placed face downward on waxed paper 20, as shown in FIG. 4. Then by rubbing with a fingertip on the back 21 until a small hole comes in the paper 14, exposing the picture film 22, the paper 14 can be rolled and peeled off, all of it being removed. The back 23 of this film 22 may be dried at this stage with a sponge or cloth, or it may be allowed to dry by evaporation.

When the back 23 is dry, the entire back 23 of the film may be covered with a coating 24, preferably using the original acrylic-polymer water emulsion that formed the coating 15, using it more sparingly this time. As shown in FIG. 5, it may be applied by the brush 16 while the film 22 is still on the waxed paper 20.

After the adhesive coating 24 of the acrylic polymer water emulsion, the film 22 is immediately placed on the new backing 25, which may be, for example, canvas or board. The entire film 22 and paper 20 is turned over to put the wet adhesive coating 24 over the canvas 25, and then the waxed paper 20 may be removed. With a damp sponge, the film 22 is smoothed out by rubbing it lightly until the film 22 is flat on the canvas 25. Alternately, a roller 26 may be used, as shown in FIG. 6.

When the film 22 is applied to canvas, one may roll the side of his palms from the center to the edges to bring out better the canvas texture. The surface may be kept wet with a sponge so that the hand will not stick to the film 22.

As shown in FIG. 7, the film 22 may be applied to a wastebasket or lampshade 27 instead of to a flat surface, again being smoothed out after application.

The picture may be considered finished when dry, or, if desired, by using the same emulsion as in the coating 15 and in the adhesive 24, more of this water emulsion of acrylic polymer may be applied with the brush to get more paint buildup, preferably trying to work in harmony with the artist's original brush stroke so that the final result will look very much like an original painting.

As shown in FIG. 8, the final picture includes a series of films, the canvas backing 25, the adhesive film 24

securing the image to the canvas backing 25, the actual image 11, and the coating 15 on top of it.

The same procedure may be used in transferring a water color or oil painting from a paper base to a canvas base or other base.

For many purposes, this finishes the transfer, and as the films 24 and 15 cure with time or with time and a warm temperature, they become harder and better able to withstand abrasion.

However, some applications may render it advisable to remove the coating 15, leaving the picture as it was at the beginning or after the thin spray coating 13 was applied. In order to do this, the picture is first dried long enough to enable the adhesive coating 24 to set, say one day at room temperature. Then the coating 15 is peeled off promptly, for after a few days peeling becomes more difficult and eventually impractical. At early stages, however, the coating 15 is still like a separate lamination and can be separated from the coating 13 mechanically, starting at one corner, and carefully peeled off. In this connection, the sprayed-on coating serves several functions: it locks the ink or color particles and holds them from distortion and bleeding; it binds the image together; and it enables the separation step. Being of the same family of chemicals as the coating 15, the coating 13 will eventually fuse or cure to it, but being different in composition, the coating 15 does not fuse with or penetrate the spray film 13 unless it is heated. Where one plans ahead for removal of the coating 15, he can aid the process by avoiding such factors as heat or time cure that would make stripping of the coating 15 more difficult.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

I claim:

1. A process for transferring a water-insoluble non-bleeding image from a paper backing to another backing, comprising the steps of:

- (1) coating said image with a water emulsion of an acrylic polymer,
- (2) drying said coating,
- (3) soaking said paper backing and coated image in water,
- (4) peeling the wet paper backing from said coated image,
- (5) coating the side of said coated image that formerly was next to said paper backing, with said water emulsion of acrylic polymer, and
- (6) applying the coated image to said other backing with the second coating still wet and against said other backing, and
- (7) drying said second coating.

2. The process of claim 1 in which, after said second coating is dried, the first said coating is promptly stripped from said image.

3. The process of claim 1 in which said image is a color ink print of an oil painting and in which during the coating step, the coating is textured and built up to simulate original textures of the oil painting.

4. The process of claim 1 in which, after said second coating is dried, another coating of the same kind is placed thereon.

5. A process for transferring a water-insoluble non-bleeding image from a paper backing to another backing, comprising the steps of:

- (1) spraying said image with a solution of acrylic resin ester in a volatile solvent so as to hold the image particles in a set position,
- (2) evaporating the solvent,
- (3) coating said sprayed and solvent-evaporated image with a water emulsion of an acrylic polymer,
- (4) drying said coating,

- (5) soaking said paper backing and coated image in water,
- (6) peeling said paper backing from said coated image,
- (7) coating the side of said coated image that formerly was next to said paper backing, with said water emulsion of acrylic polymer, 5
- (8) applying the coated image to said other backing with the second coating still wet and against said other backing,
- (9) smoothing said coated image over said other backing, and 10
- (10) drying said second coating.

6. The process of claim 5 in which after step (10) the first said coating is promptly stripped from said backed image. 15

7. A process for transferring a plural-color printed image that is water-insoluble and non-bleeding from a paper backing, comprising reproduction of a painting, to canvas backing, comprising the steps of:

- (1) brushing on said image a water emulsion of an acrylic polymer, 20
- (2) drying said coating,
- (3) soaking said paper backing and coated image in water,
- (4) peeling said paper backing from said coated image, 25
- (5) brushing on to the side of said coated image that formerly was next to said paper backing, a second coating of said water emulsion of acrylic polymer,
- (6) applying the coated image to said canvas backing with the second coating still wet and against said other backing, 30
- (7) smoothing said coated image on said canvas backing, and
- (8) drying said second coating.

8. The process of claim 7 wherein said step (1) is preceded by first spraying on a thin solution of acrylic resin ester in a readily volatile solvent and thoroughly evaporating said solvent. 35

9. The process of claim 7 in which during said step (1) brush strokes and coating build up are shaped and ordered so as to simulate the brush strokes of the original painting. 40

10. A kit for transferring an image from a paper backing to another backing, comprising in combination a packaging container containing,

- (1) a reproduction of a painting on paper backing, said reproduction having a thin coating of acrylic resin ester, printed in water-insoluble non-bleeding ink,
- (2) a canvas backing the same size as said reproduction, to which said reproduction is to be transferred by the user of the kit, said canvas having a sizing compatible with said ester,
- (3) a container of a water emulsion of an acrylic polymer for application to said reproduction, and
- (4) a brush for application of said emulsion.

11. A kit for transferring an image from a paper backing to another backing, comprising in combination a packaging container containing,

- (1) a print in water-insoluble non-bleeding ink defining said image on said paper backing, said print having a thin coating of acrylic resin ester,
- (2) a blank backing to which the print image is to be transferred,
- (3) a container containing a water emulsion of an acrylic polymer for application to said print, and incompatible with said ester,
- (4) application means for applying said emulsion to said print.

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