

March 18, 1941.

B. F. BROWN

2,235,514

TRANSFER

Filed Oct. 7, 1938

Fig. 1

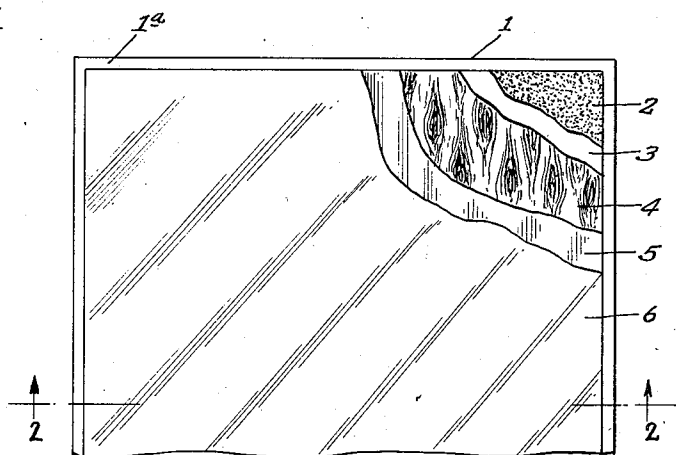


Fig. 2

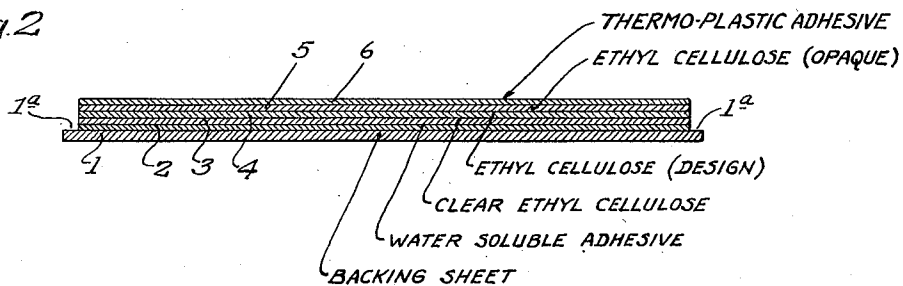
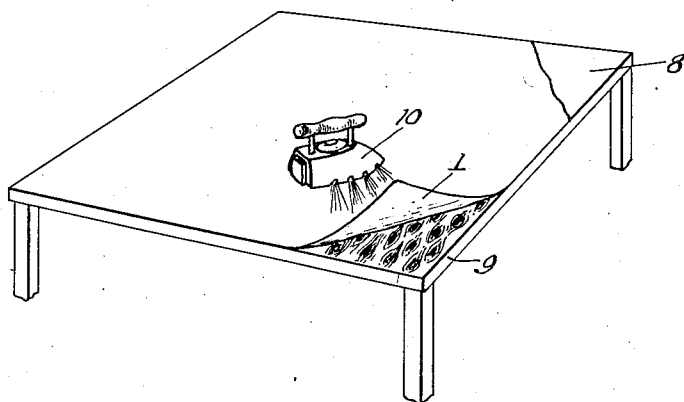


Fig. 3



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UNITED STATES PATENT OFFICE

2,235,514

TRANSFER

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Application October 7, 1938, Serial No. 233,886

7 Claims. (Cl. 41—33)

The invention relates to transfers used for transferring painted or printed patterns or designs to any desired surface.

The principal object of the invention is to provide a transfer adapted for applying a design simulating in appearances that of various wood grains, as for instance oak, walnut, mahogany, maple, etc. or any other design, as marble vein to the surfaces of any desired objects, as furniture of wood or metal, walls, wall-boards, plaster boards, metal plates, wood panels or any other surface.

It is also an object of the invention to provide a transfer adapted for applying a design to textiles, fabrics, cellulose sheets, leather, artificial leather or any other rigid or flexible material whose surfaces are not affected by the heat employed during the application of the transfer.

Another object of the invention is to provide a transfer of the above named character which eliminates the necessity of soaking the carrier sheet or backing paper in water for removing the same from the printed or painted design which is to be applied to the desired surface.

It is also an object of the invention to provide a transfer in which the film to be transferred comprises a plurality of coatings, each performing a certain purpose, and applying the film in such manner to the desired surface that during the application the various coatings will blend into each other, whereby a sharp delineation of the design particularly in the case of wood pattern will be avoided, with the result that the design will appear very natural, without any trace of any screen dots, as in the case when the various coatings have been applied by the silk screen process, or lithographic or photo engraving process.

Another object of the invention is to provide a transfer which is applied to the desired surface solely by the application of steam, heat and pressure.

Still another object of the invention is to provide a transfer having a carrier sheet or backing sheet, which during the application of the transfer to the desired surface by means of steam, heat and pressure may be removed from the film forming the pattern or design at the same time the latter adheres to the desired surface.

The invention is particularly intended for providing furniture made of cheaper woods, as gum, pine or poplar with a finish simulating in appearance that of more expensive woods as mahogany butt or burl walnut, satin wood etc. A transfer made in accordance with the invention

is readily adapted to reproduce inexpensively any desired figure or pattern of matched paneling designs, without resorting to the heretofore employed expensive photographic plate reproduction.

Other objects of the advantages of the invention will be apparent or will be pointed out in the following description forming a part of this specification.

The drawing illustrates by way of example a preferred embodiment of the transfer of the present invention and its application.

In the drawing:

Fig. 1 is a plan view of a transfer of the present invention, with portions of the upper coatings removed to illustrate the underlying coats.

Fig. 2 is an enlarged cross-sectional view of the transfer on the line 2—2 of the Fig. 1, and Fig. 3 illustrates the application of a transfer to the top surface of the table.

Referring to the drawing, 1 indicates the carrier sheet of the transfer and may consist of transparent rosin sized paper of suitable weight, depending mostly upon the size of the transfer. A 22 lb. paper has given good results. To this carrier sheet 1 is applied a coat 2 of a water-soluble adhesive, preferably a remoistening retarded glue adhesive, either by the silk screen process or a roller coating machine. Such an adhesive may be composed of hide glue, plasticized with sulphonated castor oil and reduced with suitable solvents as alcohol, toluol and water. It is advisable not to cover the entire area of the sheet 1, but to leave a small margin 1a free of adhesive on all sides of the sheet 1 as this will facilitate the handling of the sheet when still wet.

After the water soluble coat 2 has dried, a coat 3 of clear ethyl cellulose solution is applied on the coat 2 by the silk screen process. The solution consisting of ethyl cellulose dissolved in a suitable solvent as i. e. solvent naphtha and plasticized with castor oil, di-butyl phthalate or butyl lactate may be transparently tinted with an orange aniline dye, which relieves the flatness of the design and gives depth to the appearance of the transferred design. The coat 3 is permitted to dry and then a coat 4 carrying the desired detail design of the wood pattern or the like is applied to the same by the screen process. The coat 4 may consist of an ethyl cellulose solution the same as coat 3, but pigmented with the desired color, or a color varnish, to which a blending agent is added in dry form. The blending agent, which later is melted by the heat

applied when transferring the transfer to the desired surface, may consist of a gum having a low melting point, such as damar in powder form. If desired, the melting point of this gum

5 may be lowered by adding stearic acid thereto.

In order to enhance the natural appearance of a wood pattern, an intermediate coat or print may be applied to the coat 3 prior to coat 4. The intermediate coat or print produces the pores

10 of the wood and should be dark in color and of non-bleeding character and represents the wood filler used in filling the pores before staining. Such an intermediate coat will bring out the wood grain pattern in finished wood.

15 If it is desired to increase the diffusion a small amount of aniline dye of similar shade, as oil-soluble brown, may be added to coat 4. The solvents in the succeeding coat 5 will cause these to bleed or spread into coat 5.

20 After the coat 4 has dried a coat 5 forming the contrasting colored opaque base coat of the pattern is applied. This base coat may consist of an ethyl cellulose solution applied by the silk screen process or a spray gun, but it may also consist of a paint.

25 Finally, a coat 6 is applied to the dried fifth coat. The coat 6 consists of thermo-plastic adhesive applied by the silk screen process or a spray gun. A coat of clear ethyl cellulose solution or ten pounds of a dry orange shellac dissolved in one gallon of alcohol forms a suitable

30 thermo-plastic adhesive which may be used.

The transfer consisting of a carrier sheet or backing paper and a film composed of plurality of ethyl cellulose material or paint coats is now

35 ready to be applied to the desired surface. While the above described method of producing and composition of the transfer constitutes the preferred embodiment of my invention, very favorable results are also obtainable at less expense by eliminating the coat 3 of clear ethyl cellulose material. It is also possible to substitute the base coat 5 and the coat

40 6 of the thermo-plastic adhesive by a single coat as the ethyl cellulose coat 5 is in itself thermo-plastic. If the transfer is to be applied to cloth or fabric the coats 3 and 6 may be eliminated. If clear sharply defined lines are desired the

45 blending agent and the aniline dyes in the coats 4 and 5 respectively may be omitted. Preferably, but not necessarily, the coats 3, 4 and 5 are made of an ethyl cellulose base, so that these coats are softened by the heat employed during the transferring operation and blend or flow together into a single homogeneous

50 film. The blending agent and the bleeding aniline dye enhance the diffusion of the contrasting colors and this last named effect may be readily controlled by the amounts of blending agent and aniline dye respectively added to the substances forming the respective coats. Referring to Fig. 3, the transfer of the pattern or design formed by the coats 3, 4, 5 or 4, 5

55 and 6 respectively, is effected by placing the transfer with the thermo-plastic adhesive coat facing downwardly on the surface 3 to be decorated, which in the present instance is the top surface of a table 3. Before applying the transfer to the desired surface it is advisable and

60 even necessary on all wood surfaces to provide the latter with a sealer coat, as clear lacquer or the like.

65 After having placed the transfer on the surface 3, the backing sheet 1, of course, will form the top layer. In order to fix the transfer in

position a moderately hot flat iron may be applied a few seconds to one edge or a few spots of the backing sheet, to tack the transfer in position. Then a steaming iron 10 is passed over the entire area of the transfer for pressing the latter uniformly against the surface 3. As the steam from the iron penetrates the backing sheet 1 it softens and moistens the water-soluble adhesive coat 2, so that the sheet 1 can be peeled off from the transferred film carrying the pattern as soon as the iron has left the softened area of the coat 2. At the same time the heat of the iron melts the blending agent in the coat 4 and also softens the thermo-plastic adhesive coat 6 and together with the pressure of the iron causes a strong permanent adhesion of the transfer film to the surface 3. As the detail design coat 4 softens or melts its blends into the base coat 5 producing a soft diffusion of color and eliminates any sharp demarcation of contrasting colors. Distinct screen dots which usually are a feature of the silk screen process or printing from halftone plates, are not required to give graduation of color.

After the removal of the backing sheet 1 the excess remoistening adhesive still on the top face of the transferred film is washed off with a sponge and warm water. Then the transferred film is permitted to cool and dry, whereupon a coat of lacquer or finishing varnish may be applied.

It is believed obvious that the application of the transfer is not limited to plane surfaces, but that the transfer may also be applied to round columns, to so called waterfall fronts on furniture and to any other curved or angular surfaces.

In place of a steaming iron, a steaming roller may be used to advantage when large areas are to be covered by a transfer.

The backing sheet of the transfer may also serve as a protective coat for the transfer film when the same has been applied to the desired surface. In such a case the backing sheet is not removed during the time the transfer is permanently attached to the desired surface by heat and pressure, but remains thereon until such time the transfer film is no longer subjected to possible injury, for instance after the piece of furniture has been completely assembled, whereupon an application of steam is used to soften the remoistening adhesive layer 2 so that the backing sheet 1 can be removed and then the transferred film finished as already described.

If the transfers are to be applied to a transparent plate or sheet, such as Celluloid, and are to be visioned through the transparent member, the order of the coats 3, 4 and 5 has to be reversed, in order to make what is known as a "face-up" transfer. In such an instance, the coat 2, a remoistening adhesive, is applied as formerly to the backing sheet 1, and when dry the base coat 5 comes next, then coat 4 and finally coat 3 made of a clear ethyl cellulose solution, which is thermo-plastic. Coat 6 can be omitted. Lettering, if any, would be made in reverse, or reading from right to left, so as to appear upright and readable from left to right when viewed through the transparent plate or sheet.

What I claim is:

1. As a new article of manufacture, a transfer comprising a transparent rosin sized carrier paper coated on one side with a water-soluble adhesive, a coat of transparent ethyl cellulose ma-

terial on said coat of water soluble adhesive, a non-water soluble coat forming a colored design on said coat of ethyl cellulose material, a non-water soluble coat forming the base for said colored design on the coat forming the latter, and a thermo-plastic adhesive coat on the coat forming the base color of the design.

10 2. As a new article of manufacture, a transfer comprising a transparent rosin sized carrier paper coating on one side with a water-soluble adhesive, a coat of transparent ethyl cellulose material on said coat of water-soluble adhesive, a non-water soluble coat forming a colored design on said coat of ethyl cellulose material, and contain-
15 ing a blending agent in solid form, a non-water soluble coat forming the base for said colored design on the coat forming the latter, and a thermo-plastic adhesive coat on the coat forming the base color of the design.

20 3. A new article of manufacture, a transfer comprising a rosin sized carrier paper coated on one side with a water soluble adhesive consisting of hide glue, a transparent non-water soluble coat on said coat of water soluble adhesive, a non-water
25 soluble coat forming a colored design on said transparent non-water soluble coat, a non-water soluble coat forming a colored base for said colored design on the coat forming the latter, and a thermo-plastic adhesive coat on the coat forming the base color of said design.

4. A new article of manufacture, a transfer comprising a rosin sized carrier paper coated on one side with a water soluble adhesive, a transparent non-water soluble coat on said coat of water soluble adhesive, a coat of colored ethyl cellulose material forming a design on said transparent non-water soluble coat, a non-water soluble coat forming a colored base for said colored design on the coat forming the latter, and a

thermo-plastic adhesive coat on the coat forming the base color of said design.

5. As a new article of manufacture, a transfer comprising a rosin sized carrier paper coated on one side with a water soluble adhesive consisting
5 of hide glue, a transparent non-water soluble coat on said coat of water soluble adhesive, a coat of paint forming a colored design on said transparent non-water soluble coat, a non-water soluble coat forming a colored base for said colored design on the coat forming the latter, and a thermo-plastic adhesive coat on the coat forming the base color of said design.

6. As a new article of manufacture, a transfer comprising a transparent rosin sized carrier paper coated on one side with a water-soluble
15 adhesive, a coat of transparent ethyl cellulose material on said coat of water-soluble adhesive, said transparent ethyl cellulose coat being tinted with an aniline dye, a non-water soluble coat forming a colored design on said coat of ethyl cellulose material, a non-water soluble coat forming the
20 base for said colored design on the coat forming the latter, and a thermo-plastic adhesive coat on the coat forming the base color of the design.

7. As a new article of manufacture, a transfer comprising a transparent rosin sized carrier paper coated on one side with a water-soluble
25 adhesive, a coat of transparent ethyl cellulose material on said coat of water-soluble adhesive, said transparent ethyl cellulose coat being tinted with an aniline dye, a non-water soluble coat forming a colored design on said coat of ethyl cellulose material, and containing a blending agent in
30 solid form, a non-water soluble coat forming the base for said colored design on the coat forming the latter, and a thermo-plastic adhesive coat on the coat forming the base color of the design.

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