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2,746,877

DRY RELEASE TRANSFER AND METHOD OF MAKING THE SAME

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Fig. 1.

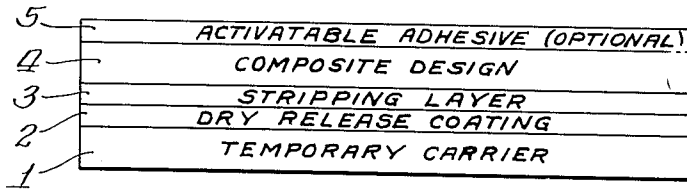


Fig. 2.

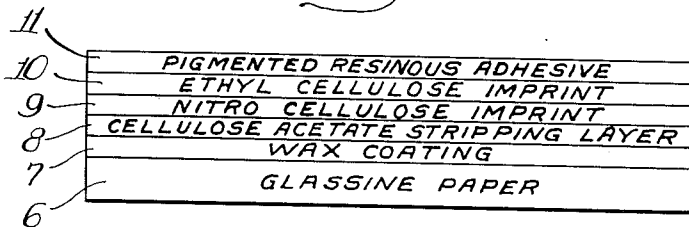
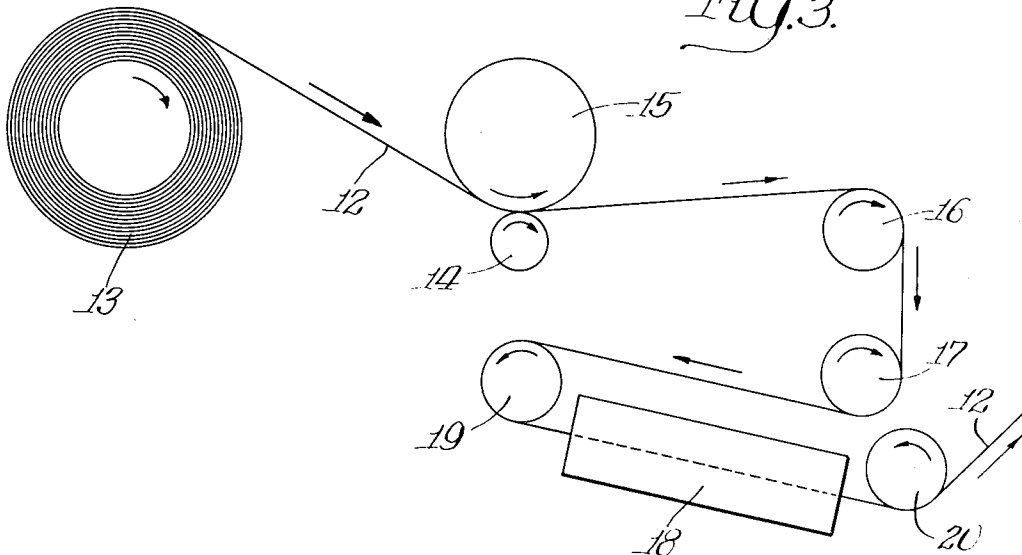


Fig. 3.



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DRY RELEASE TRANSFER AND METHOD OF MAKING THE SAME

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This invention relates to improvements in transfers or decalcomanias of the dry strip or heat release type and to a novel method of making the same.

Heretofore in the decorative transfer art, one of the most frequently used types of decalcomanias or transfers has been the so-called water releasable transfer. In this transfer the design layer is printed upon the coated side of an absorbent paper carrier or backing having a coating of a water soluble adhesive. In using this type of transfer, the entire transfer is usually wetted with water which soaks through the paper backing and dissolves or softens the adhesive coating sufficient to permit the design layer to be slid from the paper backing onto the surface being decorated. The water soluble adhesive coating adheres in part to the released design layer and serves to bond the design layer to the surface being decorated. In other instances, the opposite or outermost surface of the design layer is first adhered by special bonding means to the surface being decorated and thereafter the paper backing is soaked with water and removed. In either mode of application, however, it is necessary that the absorbent paper backing be thoroughly soaked with water in order to release the design layer.

For many applications of decorative transfers or decalcomanias the use of the water release principle is unsuitable and consequently there has been an increasing demand for transfers of the dry release type. In some cases, the dry release relationship is obtained by the use of a wax-coated carrier or backing from which the transfer can be stripped mechanically or, more frequently, is released by the application of heat to soften or melt the wax coating. In other cases, a dry strip release is obtained by superimposing relatively incompatible films or layers of resinous film-forming materials having such slight affinity for each other that the two films can be readily separated during use of the article. Thus, for example, it has been proposed to utilize a paper backing having a polyethylene or vinyl resin coating with a lacquer design layer disposed on the coated side of the paper. Because of the release properties of these coating materials, the lacquer design layer while adhering sufficiently to the coating so as to permit the transfer as a whole to be handled as a unit is nevertheless readily separable by dry stripping from the coated carrier.

In many applications of a dry release transfer it is quite important that the transfer be capable of being manufactured rapidly and in large quantities such as by gravure printing. For example, one important field of use of the dry release transfer is in the familiar tax stamps which are used on packages of cigarettes in many States. However, the basic characteristic of a dry release transfer is that the transfer design is imprinted on a temporary carrier having only relatively slight affinity or adherence for the design layer so as to be readily separable therefrom by dry release. In the web gravure printing method, the carrier such as a coated paper is passed successively in pressure contact with a plurality of printing cylinders for superimposing the required layers of the transfer and thereby ob-

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taining a final composite layer usually in a plurality of different colors. I have found that when gravure printing of a plurality of superimposed films is attempted on a carrier having a dry release coating thereon, serious difficulties are frequently encountered in the printing operation. The first layer which is printed on the coated carrier must necessarily be relatively incompatible with and have only slight affinity for the release coating on the carrier so that the desired dry release relationship will be obtained in the final article. When the next subsequent layer is applied, there is a pronounced tendency for the first applied layer to be "picked-off" or lifted because of the greater affinity of the printing ink or lacquer for the printing cylinder than for the release coating on the carrier. This difficulty is particularly serious in the use of a gravure printing technique wherein the carrier or backing is engaged with the printing cylinder or plate under pressure. Consequently, prior to my invention it has not been possible to manufacture a relatively inexpensive dry release transfer by printing a plurality of superimposed films on a dry release carrier using a web gravure press or the like. The difficulties with pick-off have been so troublesome prior to my invention that web gravure printing has not been commercially feasible. This has been particularly true with wax coated paper which is a highly desirable and inexpensive dry releasable carrier for many purposes.

Accordingly, a primary object of this invention is to provide novel means for eliminating printing difficulties in the manufacture of a multiple film dry release transfer.

A further object of the invention is to provide a novel dry release transfer having a multiple film or composite transfer design.

Another object of the invention is to provide an improved transfer of the heat releasable type utilizing a wax coated carrier.

An additional object of the invention is to provide a novel method for forming a dry release transfer including a multiple film or composite transfer design.

Still another object of the invention is to provide novel improvements in the manufacture of dry release transfers by gravure printing whereby the tendency toward pick-off during the printing of successive layers of the transfer is avoided.

Other objects and advantages of the invention will become evident from the subsequent detailed description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a diagrammatic view, on an enlarged scale, of a transfer embodying the principles of my invention;

Fig. 2 is a view similar to Fig. 1 but showing a preferred specific embodiment of the invention; and

Fig. 3 is a diagrammatic view illustrating in simplified fashion a method of practicing the invention using a web gravure printing technique.

As hereinbefore pointed out, the principal difficulty which is encountered in the commercial manufacture of a dry release transfer having a composite transfer design made up of a plurality of superimposed films is that there is frequently a tendency for an already printed film to be picked-off or lifted from the carrier or base during the application of a subsequent lacquer film or layer. The difficulty is particularly acute in a web gravure printing technique because the affinity of a printing lacquer or ink layer for the printing cylinder or plate may be greater than the affinity of this layer for the release coating on the carrier. Broadly speaking, my invention is based on the discovery that by utilizing lacquers or inks for the successive superimposed films which have diminishing affinity for each other as applied, the tendency for a previously applied film to adhere to the printing cylinder or plate during the application of the next film is so greatly diminished that pick-off is substantially eliminated. As described in

detail below, I preferably utilize a different resinous film-forming ingredient for each of the successive layers of the transfer with the result that the printing lacquers or inks can be formulated with different solvents each having a more or less selective solvent action on its particular resinous film-forming ingredient but having no adverse solvent or softening effect on the resinous film-forming ingredient of the preceding layer under normal web gravure printing conditions. In other words, each successive layer as it is being printed has little or no affinity for the previously applied layer so that there is no substantial tendency for the previously printed layer to be adhered to the printing plate or cylinder and lifted or picked-off.

Referring now to the drawings, Fig. 1 illustrates a transfer embodying the broad principles of the invention. A backing or temporary carrier for the transfer is designated at 1 and comprises preferably an inexpensive grade of commercial paper or the like. Inasmuch as the transfer is of the dry release type, the paper comprising the temporary carrier 1 may be considerably less expensive than the "water leaf" or other special unsized and water absorbent papers necessary in transfers of the water release type. The temporary carrier 1 has an inseparable dry release coating 2 thereon. In the case of a heat release transfer, this may be a wax coating such as vegetable wax having a melting point on the order of from about 190° F. to about 250° F. However, other types of dry release or dry strip coatings may also be employed, e. g. a polyethylene coating such as disclosed in Patent No. 2,558,803 to Charles Wittgren, or a vinyl resin coating such as described in Patent No. 2,154,198 to John B. Carr and Harry C. Rathke.

In order to realize the desired dry release or dry strip relationship, the next layer over the release coating 2 must be a material having substantial incompatibility with and little affinity for the coating 2. Thus, directly over the dry release coating 2 is a thin stripping layer 3 which is readily separable from the coating 2 by dry release, e. g. either by mechanical dry stripping or by heat softening as in the case of a wax coating. The layer 3 may, therefore, comprise any suitable resinous film-forming material which would have the desired incompatible and dry release relationship with the particular material selected for the coating 2. For most purposes, I prefer to utilize cellulose acetate as the resinous film-forming ingredient of the stripping layer 3 as this material has been found to be readily separable from a wide variety of release coatings. As described at length in my copending appln. Ser. No. 323,851, filed December 3, 1952, a cellulose acetate stripping layer in which the cellulose acetate content comprises at least about 2/3 by weight of the film is highly effective as a stripping layer when the coating 2 is an ordinary gum coating such as dextrine. A cellulose acetate stripping film 3 also is particularly effective when the release coating 2 comprises a wax. Equally good results are also obtained when the coating 2 is polyethylene or a vinyl resin and the stripping layer 3 is cellulose acetate or nitrocellulose.

It will be understood that the stripping layer 3 and the subsequent layers may be applied over the release coating 2 by any suitable technique such as roll coating, brushing, spraying, knife spreading and screen printing. However, as will hereinafter appear, the invention is particularly suited for the use of gravure printing techniques for the application of the layer 3 and the subsequent layers of the transfer.

Immediately over the stripping layer 3 is a composite design or imprint 4 which is made up of a plurality of superimposed lacquer or ink films. The important feature of my invention is that the lacquer or ink used in forming each of these films comprising the design 4 contains a different resinous film-forming ingredient and a different selective solvent. Moreover, the solvent for each successive layer is carefully selected so as to have no adverse solvent or softening effect on the resinous film-forming ingredient of the preceding or underlying lacquer. In other

words, where the stripping layer is cellulose acetate, the next adjacent film component of the design 4 which is applied directly over the stripping layer 3 comprises a different resinous film-forming ingredient (i. e. not cellulose acetate) and a solvent which is substantially selective for that particular ingredient and has no adverse solvent or softening effect on the cellulose acetate contained in the layer 3. Because of the fact that cellulose acetate is substantially resistant to and not readily softened by the predetermined solvent selected for the next adjacent layer, I have found that there is no undesirable tendency for the layer 3 to be picked-off or lifted from the release coating 2 by adherence to the printing plate, cylinder, or other device used in applying the next layer over the stripping layer 3.

Following the foregoing principle, each successive layer or film in the composite design 4 comprises a different resinous film-forming ingredient from the previously applied layer, and the solvent used in preparing the lacquer or ink for any given layer is carefully formulated so as to be substantially selective for the particular resinous film-forming ingredient of that particular layer but having no substantially adverse solvent or softening effect on the resinous film-forming ingredient of the previously applied layer. Thus, the lacquer for a second layer is so formulated that when applied over a first layer it has little or no affinity for the first layer, the lacquer for the third layer as applied has little or no affinity for the second layer, and so forth, with the result that lifting or pick-off of any previously applied layer is substantially eliminated.

Generally speaking, I may use any suitable combination of different resinous film-forming ingredients for the various films comprising the stripping layer 3 and the composite design or imprint 4. By the term "resinous film-forming" material or ingredient I include the resins formed from natural materials such as the cellulose esters and ethers as well as the usual vinyl, acrylic, and other conventional resins. Within the broad scope of the invention, any suitable sequence of resinous film-forming materials may be employed so long as the solvents used in formulating the fluid lacquers or inks containing these ingredients are substantially selective and are so correlated that the solvent contained in any given layer or film of lacquer has no substantially adverse effect on the resinous film-forming ingredient of the underlying layer. As a practical matter, cellulose acetate has been found to be the preferred material for the stripping layer 3 for the reasons hereinbefore discussed. In addition, there are certain practical and economic limitations on the formulation of organic solvents having the desired selective action so that the number of commercially feasible combinations is somewhat limited. For most purposes, entirely satisfactory results will be obtained by utilizing the common cellulose esters or ethers for the layer 3 and the different component films of the design 4. In particular, cellulose acetate, nitrocellulose, and ethyl cellulose used in varying combinations have been found to be most successful. Of course, it will be understood that in each case the organic solvents used to formulate the cellulose ester or ether lacquers must be selected in accordance with the principle hereinbefore discussed to provide the desired progressively decreasing solvent action as each layer or film is superimposed upon the preceding layer.

As shown in Fig. 1, the transfer also comprises an outermost layer 5 which consists of a resinous adhesive ingredient capable of being activated either by heat or by a suitable solvent in order to develop adhesive properties therein. As will be recognized, this layer 5 is optional dependent upon the intended use of the transfer. However, when the layer 5 is used the transfer design is applied by activating the adhesive layer 5 with heat or a solvent, pressing the activated layer 5 against the surface to be decorated, and finally effecting a mechanical dry release or stripping between the layers 2 and 3 so as to remove the carrier 1 with the coating 2 thereon. In many

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cases, the layer 5 will consist of a pigmented resinous adhesive such as a maleate resin, an acrylic resin, polyvinyl methyl ether, etc.

By way of a more specific example, reference is now made to Figs. 2 and 3 which illustrate a preferred embodiment of the invention. Fig. 2 illustrates a decalcomania transfer of the heat releasable and heat applied type which is particularly suitable for use as a tax stamp on cigarette packages. The temporary carrier comprises a sheet of glassine paper 6 and a vegetable wax coating 7 with a melting point of about 240° F.. A plurality of superimposed layers 8, 9, 10 and 11 are applied over the wax coating 7 by web gravure printing as hereinbefore described. The layer 8 is a cellulose acetate stripping layer which has a sufficient affinity for the wax coating so that the transfer can be handled as a unit but which is readily releasable from the coating 7 by simple dry stripping or by heat release when the wax is softened or melted by the application of heat. The layer 9 is a nitrocellulose lacquer character print containing the desired printed indicia. The next layer 10 is a clear ethyl cellulose lacquer print. The final or outermost layer 11 is in this case a pigmented heat activatable resinous adhesive layer which serves as a background for the design when transferred and also as an adhesive for securing the transfer design. In using the transfer, the tax stamp is pressed against the cigarette package with the glassine paper 6 outermost and heat is applied. Upon heating, the adhesive layer 11 is activated sufficiently to secure the composite layers 10, 9 and 8 as a unit to the cigarette package and at the same time the wax coating 7 is softened or melted so that the paper 6 can be readily stripped from the transfer leaving the cellulose acetate layer 8 as the outermost protective layer of the applied transfer design.

In Fig. 3 the method of forming the transfer by web gravure printing is shown in schematic fashion, the web gravure press comprising a continuous moving carrier or web 12 of wax coated glassine paper which is unwound from a feed roll 13. A plurality of rotatable printing or plate cylinders are operatively disposed adjacent the web 12 for successively engaging and printing upon the carrier paper, one such printing roll being designated at 14 below the web 12 and having a cooperating back-up or pressure cylinder 15 above the web.

As the wax coated carrier passes between the cylinders 14 and 15, a cellulose acetate lacquer layer (as at 8 in Fig. 2) is applied over the wax coating. This lacquer formulation may contain the following ingredients in the indicated proportions:

Ingredients	Wt. Per- cent
Cellulose Acetate (Hercules Powder Co. LL-1)	16.7
Methyl Phthalyl Ethyl Glycolate (Santicizer M-17)	5.5
Aryl Sulfonamide Formaldehyde Amine Resin (Santolite MHP)	2.8
Solvent	75.0
	100.0

The solvent in the above formulation is preferably a multi-component solvent in order to provide the desired volatility characteristics. A particularly suitable fast evaporating solvent is as follows:

Ingredients	Wt. Per- cent
Acetone	81.8
Methyl Alcohol	9.1
Methyl Cellosolve Acetate	9.1
	100.0

The wax coated carrier 12 having the cellulose acetate layer 8 applied thereon next passes over a pair of upper and lower cylinders or rolls 16 and 17 which are heated

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internally for effecting preliminary drying of the layer 8. Drying of the lacquer layer is then completed by passing the web 12 through an elongated heating zone 18, the web being guided by inlet and outlet idler rolls 19 and 20.

It will be understood that when reference is made herein to a lacquer layer, the ultimate dry layer in the final decalcomania or transfer consists merely of the lacquer residue, i. e. the resinous film-forming ingredient with any additional modifying resins and/or plasticizers. As initially applied, each lacquer layer is, of course, a liquid comprising a substantial proportion of solvent, but upon drying the solvent components are evaporated and only the lacquer residues remain.

The apparatus shown schematically in Fig. 3 represents only the first unit of the press for applying the first layer. Thereafter the web 12 passes through successive similar units of the press (not shown) for applying the remaining layers. In the second unit of the press the nitrocellulose character or color print 9 is applied directly over the cellulose acetate layer 8. A typical preferred formulation for the nitrocellulose lacquer is as follows (the proportions being indicated in parts by weight):

	Parts
Nitrocellulose (Hercules Powder Co. RS ½ Sec.)	8
Plasticizer	6
Carbon black	4
Ethyl alcohol	5
Ethyl acetate	30
Butyl acetate	7
Toluol	40

It will be understood that the alcohol, ethyl acetate, butyl acetate, and toluol comprise the multi-component solvent of the lacquer. The plasticizer may comprise blown castor oil, dibutyl phthalate, tricresyl phosphate or any combination of the same. In accordance with the selective solvent concept hereinbefore discussed, the multi-component solvent of the nitrocellulose lacquer described above does not have any detrimental solvent or softening effect on the previously applied cellulose acetate layer 8, and as a result there is no tendency for the layer 8 to be picked-off during application of the layer 9 by a printing cylinder similar to the cylinder 14.

In the third unit of the press the web 12 is contacted with a printing cylinder which applies the ethyl cellulose lacquer layer 10. A preferred formulation for the ethyl cellulose lacquer in parts by weight is as follows:

	Parts
Ethyl cellulose (Hercules Powder Co. N-7)	10
Castor oil	5
Toluol	65
Ethyl alcohol	20

Here again, the solvent in the ethyl cellulose lacquer, i. e. the toluol and alcohol, is substantially selective for ethyl cellulose and consequently there is no detrimental solvent or softening effect on the nitrocellulose contained in the previously applied layer 9. Thus, any tendency toward pick-off is again eliminated.

Finally, the web 12 passes through a fourth press unit wherein the outermost adhesive layer 11 is applied. The composition of the pigmented adhesive layer 11 may be as follows (parts by weight):

	Parts
Maleic modified resin (Rohm & Haas Amberol 801)	14
Chrome yellow pigment	22
Plasticizer	4
Toluol	60

The plasticizer in the above formulation may again be blown castor oil, dibutyl, phthalate, tricresyl phosphate, or any combination thereof. In this instance, the solvent for the maleate resin consists solely of toluol which has no adverse solvent or softening effect on the ethyl cellulose contained in the underlying layer 10 so that pick-off is again avoided.

Although I have described a particular preferred embodiment of the invention in connection with Figs. 2 and 3, it will be understood that numerous variations may be resorted to in accordance with the broad principles of the invention. For example, in the transfer shown in Fig. 2, any one of the layers 9, 10 or 11 may be omitted with equally good results insofar as freedom from pick-off is concerned during the web gravure printing operation. Thus, by omitting the nitrocellulose layer 9, the ethyl cellulose layer 10 may comprise the design imprint disposed directly against the cellulose acetate stripping layer 8. If the ethyl cellulose layer 10 is omitted, the maleate resin layer 11 is imprinted directly against the nitrocellulose layer 9. On the other hand, in certain applications the outermost activatable adhesive layer 11 may be entirely omitted. However, in each case the selectivity of the particular solvents for each of the superimposed layers is maintained so that the resinous film-forming ingredient of each layer is resistant to the particular solvent employed for the lacquer of the next succeeding layer.

As an illustration of a further modification of the invention, the transfer of Fig. 2 may be modified by omitting the ethyl cellulose layer 10 and utilizing an outermost adhesive layer containing the following ingredients (parts by weight):

	Parts
Polyvinyl methyl ether.....	10
Chrome yellow pigment.....	20
Ethyl alcohol.....	70

As still another modification the outermost adhesive layer comprising polyvinyl methyl ether as just described may be replaced with a pigmented acrylic resin layer containing the following ingredients (parts by weight):

	Parts
Acrylic ester resin (Rohm & Haas Acryloid B72)....	10
Chrome yellow pigment.....	20
Toluol.....	70

A further modification of the invention utilizing a different stripping film consists of a paper carrier having a polymerized vinyl resin coating thereon as the release coating. Directly over this coating are superimposed successive nitrocellulose and ethyl cellulose lacquer layers corresponding to the films 9 and 10 in Fig. 2. Finally, an outermost adhesive layer 11 may be used comprising a maleate, acrylic, or polyvinyl methyl ether resin formulation of the types described above.

It is also within the scope of the invention to employ various other combinations of materials for the release coating 2 and the stripping layer 3 in Fig. 1 in order to obtain the desired dry release or dry strip relationship in the final transfer. As hereinbefore mentioned, another satisfactory release coating for the carrier comprises polyethylene, and in this case the immediately adjacent stripping layer may comprise a cellulose ester or ether film, particularly cellulose acetate, or any other suitable resinous film-forming material.

Although the invention has been described with particular emphasis on certain specific or preferred embodiments, it is to be understood that various modifications and equivalent materials may be employed without departing from the scope of the invention as defined in the appended claims.

I claim:

1. A dry release transfer comprising a temporary carrier, a dry release coating on said carrier, a stripping layer on said coating comprising a resinous film-forming ingredient readily separable by dry release from said coating, and a compound design carried on said stripping layer and separable as a unit therewith, said design comprising a plurality of superimposed layers each consisting essentially of the residue from a lacquer of a different resinous film-forming material, the solvent in each lacquer layer as initially applied being selective for the

resinous film-forming material contained therein and having substantially no solvent or softening effect on the resinous film-forming material of the underlying layer so that disfiguration of the respective layers is avoided.

2. The transfer of claim 1 further characterized in that said release coating comprises a wax.

3. The transfer of claim 1 further characterized in that said release coating comprises polyethylene.

4. The transfer of claim 1 further characterized in that said release coating comprises a vinyl resin.

5. The transfer of claim 1 further characterized in that the layers in said design comprise a material selected from the group consisting of the cellulose esters and ethers.

6. The transfer of claim 1 further characterized in that an outermost layer is provided over said design comprising a heat activatable adhesive for securing the design to a surface.

7. A dry release transfer comprising a temporary carrier having a wax coating thereon, a cellulose acetate film directly against said wax coating, and an imprint carried on said film, said imprint comprising a plurality of lacquer layers each containing a different film-forming ingredient selected from the group consisting of nitrocellulose and ethyl cellulose, and an outermost layer of a heat activatable resinous adhesive whereby to permit securing the imprint to a surface by heat activation and at the same time releasing said film and imprint from said carrier.

8. A dry release transfer comprising a paper carrier having a vegetable wax coating thereon, a cellulose acetate stripping film directly against said wax coating, a compound design imprint comprising superimposed layers of nitrocellulose and ethyl cellulose lacquers on said stripping film, and an outermost resinous adhesive layer adapted to be activated by heat for securing the imprint to a surface while at the same time releasing the stripping film and imprint from said carrier.

9. The transfer of claim 8 further characterized in that said adhesive layer comprises a maleate resin.

10. A dry release transfer comprising a paper carrier having a vegetable wax coating thereon, a cellulose acetate stripping film directly against said wax coating, a nitrocellulose design layer superimposed on said stripping film, and an outermost heat activatable resinous layer comprising polyvinyl methyl ether.

11. A dry release transfer comprising a paper carrier having a vegetable wax coating thereon, a cellulose acetate stripping film directly against said wax coating, a nitrocellulose design layer superimposed on said stripping film, and an outermost heat activatable resinous layer comprising an acrylic ester resin.

12. A dry release transfer comprising a paper carrier having a vinyl resin coating thereon, a nitrocellulose stripping film directly against said stripping film, an ethyl cellulose design layer superimposed on said stripping film, and an outermost resinous adhesive layer adapted to be activated by heat for securing the design layer to a surface.

13. In the formation of a dry release transfer by pressure application of a plurality of films over a temporary carrier having a release coating thereon wherein there is a tendency for a previously applied film to be picked-off during application of the next successive film, the improvement which comprises applying in predetermined sequence over said coating a plurality of superimposed layers each comprising a different resinous film-forming ingredient in a selective solvent for the same, and drying each layer before application of the next successive layer, the first of said layers in contact with said coating comprising a resinous film-forming ingredient having only slight affinity for said coating so as to be readily separable therefrom by dry release with the remaining layers adhering to each other and to the first layer for release as a unit from the carrier, and the solvent in each of said layers being selective for the resinous

film-forming ingredient contained therein but having no substantial solvent or softening effect on the resinous film-forming ingredient of the previously applied layer whereby to avoid pick-off of a previously applied layer during application of the next subsequent layer.

14. A method of forming a dry release transfer having a temporary carrier with a dry release coating thereon which comprises the steps of applying over said coating a first layer comprising a resinous film-forming material readily separable by dry release from said coating, drying said first layer, and thereafter forming on said first layer a compound design by separately applying in predetermined sequence over said first layer a plurality of superimposed lacquer layers each containing a resinous film-forming ingredient and a selective solvent for the same and drying each lacquer layer before applying the next successive lacquer layer whereby said first layer and said lacquer layers adhere together for release of said first layer and said design as a unit from the carrier, the resinous film-forming ingredient in each layer being different from the resinous film-forming ingredient of the previously applied layer, and the solvent in each lacquer layer having no substantial effect on the resinous film-forming ingredient of the previously applied layer.

15. A method of forming a dry release transfer by gravure printing which comprises the steps of passing a temporary carrier having a dry release coating thereon in contact with a first printing cylinder and thereby applying over said coating a first layer comprising a resinous film-forming material readily separable by dry release from said coating, drying said first layer, and thereafter forming on said first layer a compound design by passing said carrier in successive printing contact with a plurality of

additional printing cylinders and thereby applying in predetermined sequence over said first layer a plurality of superimposed lacquer layers each containing a resinous film-forming ingredient and a selective solvent for the same and drying each lacquer layer before applying the next successive lacquer layer whereby said first layer and said lacquer layers adhere together for release of said first layer and said design as a unit from the carrier, the resinous film-forming ingredient in each of said layers being different from the resinous film-forming ingredient of the previously applied layer, and the solvent in each of said lacquer layers being selective for the resinous film-forming ingredient contained therein but having no substantial effect on the resinous film-forming ingredient of the previously applied layer whereby to avoid pick-off of a previously applied layer during printing of the next subsequent layer.

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