United States Patent

[11] **3,607,525**

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[54] **METHOD FOR TRANSFER OF A PICTURE FROM AN INITIAL SUPPORT TO A NEW SUPPORT**
2 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **156/235,** 156/240, 156/247, 161/406, 161/413
[51] **Int. Cl.** **B44c 1/16**
[50] **Field of Search** 156/235, 240, 247

[56] **References Cited**

UNITED STATES PATENTS

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1,059,185	2/1967	Great Britain	156/235

Primary Examiner—Leland A. Sebastian
Attorney—Larson, Taylor & Hinds

ABSTRACT: In the transfer of a picture from an initial support to a new support, a method which comprises pressing a sheet covered with a glue means layer onto a printing dye layer contained on an original support, removing the sheet to leave the glue means layer on the printing dye layer, pressing into contact with the glue means layer an intermediate support comprising in layers above each other, a clear lacquer layer, an attachment means layer easily releasable from the lacquer layer and a base support layer, removing the original support, applying the intermediate support with said printing dye layer attached thereto onto a new support and removing the base support layer of the intermediate support.

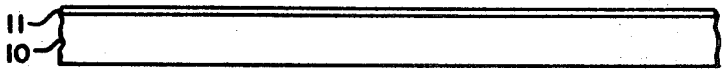


Fig. 1

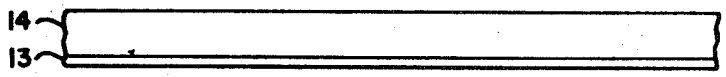


Fig. 2

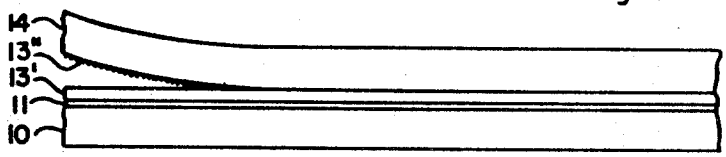


Fig. 3

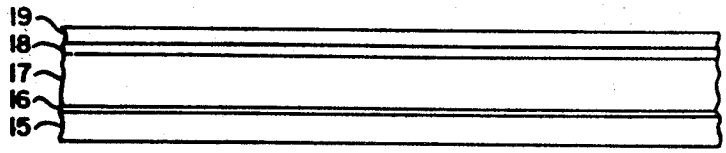


Fig. 4

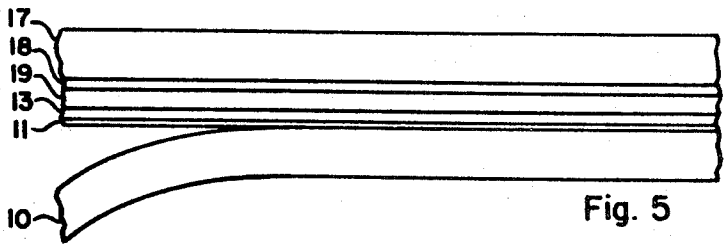


Fig. 5

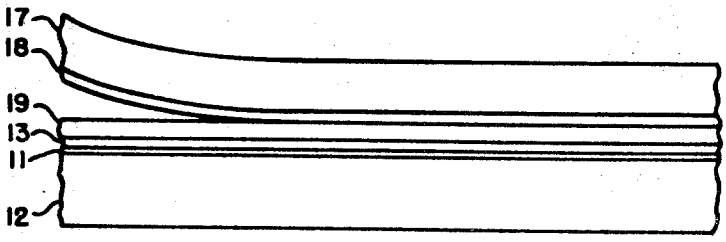


Fig. 6

METHOD FOR TRANSFER OF A PICTURE FROM AN INITIAL SUPPORT TO A NEW SUPPORT

This inventor has already in the British Pat. No. 1,059,185 or the U.S. Pat. No. 3,344,012 proposed means for providing transfer from pictures, produced on an initial support, for instance by a printing method, such as pictures on a support of art printing paper, to a new support, for instance a surface of textile material, or wood, of stone or the like. In this transfer method an intermediate support is used in the form of a non-moisture-sensitive laminate containing the following layers, mentioned in sequence of order: a carrier layer, a releasable attachment means layer, a clear lacquer layer and a glue layer attaching due to pressure. The intention has been, that one should press this intermediate support with its pressure sensitive glue layer against the picture surface of the initial support and thereafter remove the initial support of said picture, whereby the picture has been transferred in image form to the intermediate support. Thereafter the intermediate support should along with the picture fixed thereon by applied on the final support, whereby the picture has been moved to this final support in correctly turned state.

In tests with the above mentioned method it has proved, however, that one can achieve an extremely good result, but the carrying through of said method requires also good skillfulness from the side the operator, and usually also a given equipment of apparatus, such as a press provided with elastic rollers. Lacks regarding skill and to still higher degree lacking availability of a press of the above mentioned kind, however, causes that the operator must often completely by hand make the picture transfer, with the lack of accuracy following thereby, and it then also proves, that this picture transfer has often bad success. The bad success results in the presence of parts of the picture being transferred in a worse state, so called blots, where, in some cases, even the picture is not transferred at all. Such blots, as a rule, cannot be repaired, because the original picture has already been used up, and often a new original picture is not available.

When manufacturing the said intermediate support, it has further proved that difficulties may arise. The intermediate support, as a matter of fact must contain a plurality of layers, more closely four such layers at least, viz the carrier layer, which can be formed by any appropriately strong paper, which is provided on its one side with a releasable layer of an attachment means of a kind, which makes it possible to remove the carrier layer and the attachment means layer attached thereto from the remaining parts of the intermediate carrier. This attachment means layer may for instance be formed by silicon, and in such a case one may directly tear off the carrier layer and the attachment means layer from the remaining layers of the intermediate carrier. Outside of this releasable attachment means layer, the intermediate carrier is provided with a layer of a clear lacquer forming the layer, which carries directly up the picture during the picture transfer, and outside of said clear lacquer layer there is finally a glue layer of the kind, which causes attachment, when it is subject to pressure, and which is preferably formed by a pressure sensitive sticking plastic. The great number of layers of different kinds thus applied on each other may form a first reason for the emanation of the above mentioned blots. Other reasons, however, may also occur. It is also obvious, that it will be more difficult to produce the intermediate carrier, the greater the number of layers contained therein is, and that as a consequence of difficulties in the manufacturing process errors may be created in the intermediate carrier, which should have been possible to avoid, if the number of layers had been smaller.

Tests have now been made to divide the layers, existing in the intermediate carrier, up to more than one unit of laminate, and thereby it has been found on purely empirical way, that by a given distribution comprised by the present invention complete security is gained against creation of such blots as mentioned above, even if one applies the intermediate carrier onto the picture carrying initial support practically without any force, instead simply loosely laying it onto the same. No machine pressure is therefore required, in order that one shall be sure to get a good result.

According to the invention this method for picture transfer is executed in the way, that one first puts a layer on the picture surface of the initial support, containing a glue material, by pressing a laminate, comprising a glue agent, attaching due to pressure, onto a support of plastic, paper or the like, with the pressure sensitive glue agent layer against the picture side of the initial support, whereafter the paper, the plastic or the like is teared off from said laminate, a sufficiently great amount of the pressure sensitive glue agent thereby remaining in contact with the picture surface. This is thereafter prepared for reception of the intermediate support, which comprises in this case a nonmoisture-sensitive laminate of the above described kind, however in lack of the pressure sensitive glue agent layer.

This is possible, because the glue layer has already in advance been applied onto the picture surface. If one acts in this way, then it proves, that one may without the slightest difficulty and also with out risk for errors occurring execute a perfect transfer of a picture.

The invention will be further described below in connection to the attached drawing, which shows a couple of different forms of execution of the invention.

FIG. 1 thereby shows a paper, for instance an art printing paper with a picture placed thereon, which should be subject to a transfer operation.

FIG. 2 shows in section a glue agent laminate comprising a fixed but weak plastic, carrying up a layer of the glue agent, and

FIG. 3 shows the laminate, created when one combines the laminate according to FIGS. 1 and 2.

FIG. 4 shows a laminate, intended to be used as intermediate support, and

FIG. 5 shows the laminate, created after one has removed a carrier layer existing in the laminate according to FIG. 4 and has applied the laminate thus created on the laminate shown in FIG. 3.

FIG. 6 shows the state after the picture has been transferred onto the new support.

In FIG. 1, 10 is a sheet of paper, for instance an art printing paper, on which a print has been applied, represented by the layer 11 in printing dye. This paper along with the printing dye layer attached thereto forms the picture original, from which the picture should be transferred to a support shown in FIG. 6, where it is indicated by 12.

For adding glue to the printing dye layer 11 one uses a material of rather deliberate character, such as a thin web of plastics, a sheet of cellophane, an impregnated sheet of paper 14 or the like, see FIG. 2, which has in a way known per se been combined with a sticking, nondrying agent, for instance a suitable plastic 13. This sticking agent should be used as a glue agent, but it is obvious, that the glue agent may be of very different kinds, and the choice of a given glue agent is of no limitating effect for the scope of the present invention.

The laminate 13–13 is now applied on the existing original print 10, 11. It is not necessary to press the two parts onto each other, and especially not to roll them in a machine suitable for such a purpose, but it may be suitable carefully to check, that no air bubbles exist. These may however easily be worked away by flattening out by means of the fingers or any other weak subject. One will then obtain the laminate shown at right in FIG. 3. Thereafter one separates from said laminate the support 14 for the glue agent 13, as shown at left in FIG. 3. In most cases this can take places simply by tearing off the support layer 14, which has thereafter no more use. The result will be that one has obtained a laminate of the following layers in sequence of order: the art printing paper 10, the printing dye layer 11 and the glue layer 13. It may happen, that a given part of the initially existing glue layer follows with the support 14, when this is torn off, as indicated at 13', but the remaining quantity of the glue agent 13' is nevertheless sufficient for fulfilling the method. If a thin layer of silicone is applied in a way known per se between the support 14 and the glue layer 13, one may be sure that this glue layer is transferred in total.

One has now to take the ready prepared intermediate support according to FIG. 4, which may suitably be sold as a

ready made product. This comprises a protection layer **15**, a thin layer **16** of an attachment agent, for instance silicone or the like, which may on the one side retain the protection layer to the remaining parts of the laminate but which will on the other hand cause such a weak bond, that one may without any difficulty tear off the protection layer, and above such attachment agent layer a bearing paper **17**, which should be impregnated, so that it is safe against water. For instance this bearing paper may be formed by a very thin oil impregnated paper weft of the kind, usually called presspane. Above this bearing paper there is a layer of a clear lacquer **19**, which is retained to the intermediate support by means of the attachment agent layer **18** of a kind, which is easily releasable from the clear lacquer layer **19**, and the character of which will be further described below.

The protection layer **15** is not necessary per se. Under given circumstances, however, it may be useful. For instance, it may comprise a bigger sheet, which may easily be rolled, and which is sufficiently stiff in order of protecting the inside parts. On this sheet one may have applied a plurality of smaller units of the remaining layers of the laminate. Sometimes the waterproof paper may be so brittle, that it may easily be damaged, if there is no protection layer. If such materials are used in the remaining layers, however, that they do not require a stiffer protection layer, then this layer may be omitted.

If one uses a protection layer **15** along with the attachment means layer **16**, they may after having been torn off be used as a substitute for the support layer **14** and the glue layer **13**. Also the reversed sequence of order is possible.

The attachment means layer **18** between the bearing paper **17** and the clear lacquer layer **19** should, as mentioned above, be of such a kind, that they may easily be removed from the clear lacquer layer **19** along with the bearing paper **18**. They may comprise a paste or glue like substance, which is easily dissolvable in water, but they may also comprise any other easily dissolvable material, which breaks up its bond under mechanical influence, for instance a thin layer of silicone. As water dissolvable layer for this purpose the product is recommended, which is often used for instance in decalcomanias, viz starch and gum arabic in combination, but many other means may be used.

Thereafter one has the two initial foils, and hereafter one has only to apply them with the correct surfaces turned onto each other, whereby one has therefore to apply the laminate according to FIG. **4** with the clear lacquer layer **19** onto the glue material layer **13'** according to FIG. **3**. One will then obtain a composed laminate of the type indicated at right in FIG. **5**.

Thereafter the possibly existing protection layer **15** is removed together with the attachment means layer **16**, and the initial picture carrier **10** is removed, for instance by washing, although this has been shown schematically in FIG. **5** in the same way as in the earlier Figures, that means as if a real mechanical tearing off took place. In tests which have been made it has proved, that one will sometimes not get all of the layer of printing dye **11**, but that a very small rest thereof will remain in contact with the initial support **10**. This rest quantity, however, is so small that it does not play any decisive roll for the applicability of the method or for the quality of the final product. One has in this way provided an intermediate support provided with the picture, which may directly be transferred to the final support **12**. It should be observed, that the glue material **13'** may as a rule be assumed to penetrate the printing dye layer **11** to such a degree, that a rather combined layer comprising glue dye means is obtained. It is therefore usually not necessary to provide the final support **14** with any specific glue layer, but the glue layer **13'** is sufficient in order that the picture should be attached to the final support **12**.

Thereby, one acts in the way, shown in FIG. **6**. One puts the formed laminate with the image turned side of the transferred picture downwardly on the new support **12**, whereby a formation is obtained such as indicated in FIG. **6**. This formation comprises, as seen from the drawing, the new support **12**, which may be paper or glass or any deliberate material, and which must not at all be smooth but may have a strongly uneven surface, on the picture layer in the form of the transferred printing dye **11**, thereon the glue layer **13**, which is clear, and outside of it the clear lacquer layer **19**, which is also extremely well transparent, the releasable attachment means layer **18** and finally the bearing paper **17**. The picture is therefore now covered by the bearing paper, which only has the function of supporting the intermediate support against shrinkage or deformation or other damages, until the picture has been transferred, The bearing paper should therefore remain as long as possible, also when the picture has been finally laid on the support **12**. Only thereafter the bearing paper **17** is removed, preferably together with the layer **18** of the releasable attachment means, such as shown at left in FIG. **6**. One has now got a picture in correctly turned state on the new support **12**, covered by the following layers which are throughout transparent, viz the glue layer **13** and the clear lacquer layer **19** and possibly unessential rest quantities of the attachment means **18**. However, it is assumed that no such rests are needed, the attachment means **18** completely following with the bearing paper **17** when this is removed.

It is of no essential importance for this invention that a mechanical tearing off of the bearing paper takes place, but this may, as mentioned above, also be attached to the remaining parts of the intermediate support layer by means of a water dissolvable glue or the like, which after dissolution makes it possible to tear off the support paper.

The support paper **17** may have an impression pattern, which when transferred to the picture surface will appear on the final picture. Thereby one may cause a fascinating relief action, for instance an imitation of strokes of a pencil.

The invention of course, is not limited to the specific form of execution, described above and shown in the drawing, but all kinds of different modifications may occur within the frame of the invention.

What I claim is:

1. A method for transferring a picture from an initial support to a new support which comprises pressing a sheet covered with a glue means layer onto a printing dye layer on an original support, removing said sheet to leave said glue means layer on said printing dye layer, pressing into contact with said glue means layer an intermediate support comprising in layers above each other, a clear lacquer layer, an attachment means layer easily releasable from said lacquer layer and a base support layer, removing the original support, applying said intermediate support with said printing dye layer attached thereto onto a new support and removing the base support layer of said intermediate support.

2. The method of claim **1** wherein said easily releasable attachment means layer is a layer of silicone.