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(54) Transfer sheet and method of manufacture

(57) A method of manufacture of a transfer is described. A message (41) is printed on a first strip 13,15, 17 and the first strip is adhered to a second strip (23,25,27,29). A transfer (51) may be formed by die-cutting. A transparent layer (17) protects the print (41). The transfer may be used in security applications.

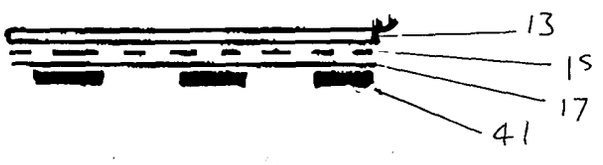

Fig. 4a

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Fig. 4b

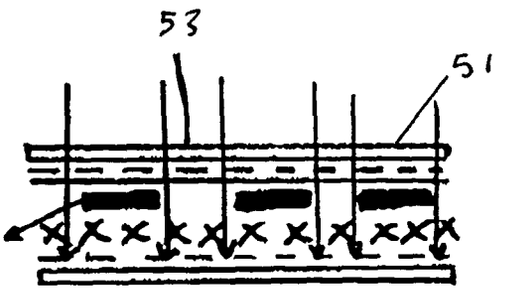

Fig. 4c

Description

[0001] The invention relates to a transfer sheet and a method of its manufacture.

[0002] A wide variety of transfer methods are known. In these methods, a transfer in the form of a transfer substrate is adhered in some way to a backing substrate. An image may then be printed onto the transfer substrate of the transfer. The transfer is applied to the material to be decorated, and the backing substrate is removed. An image may then be printed onto the transfer substrate of the transfer. The transfer is then left adhered to the material to be decorated. Since the transfer is printed on the opposite side to the backing substrate, the print is on the top surface when the transfer is applied. Accordingly, the print may be scratched or rubbed off in use.

[0003] Existing methods may also have the disadvantage that they may require water, or a combination of heat and pressure, in order to apply the transfer to a surface.

[0004] According to a first aspect of the invention there is provided a method of manufacture of a transfer comprising providing a first strip having a transparent layer on a first release backing, printing an image onto the transparent layer, providing a second strip having a layer of transfer adhesive and a second release backing on one side of the transfer adhesive, and laminating the printed side of the first strip to the second strip on the opposite side of the transfer adhesive to the tight release backing.

[0005] In contrast to prior art processes, with the print layer exposed, the process according to the invention protects the print layer by the transparent layer. The process is also possible to automate; the first and second strips can be supplied as a "kit" to enable transfers to be manufactured using a printing station and a die cutter, equipment which is widely available.

[0006] The second strip may have an easy release backing on the opposite side of the transfer adhesive to the second release backing, and the method may further comprise the step of removing the easy release backing before the step of laminating the first strip to the second strip. The easy release backing may cover the adhesive while the second strip is stored.

[0007] Individual transfers may be die cut by cutting through the first strip and the second strip up to the tight release backing after the two strips are laminated together. In embodiments, waste between individual transfers is stripped from the transfers after die cutting.

[0008] According to a second aspect of the invention there is provided an image transfer system comprising a first strip having a transparent layer on a first release backing, and a second strip having a layer of transfer adhesive, and a second release backing on one side of the transfer adhesive.

[0009] An easy release backing may be provided on the other side of the transfer adhesive to the tight release backing. The easy release backing is easier to release from the adhesive than the second release backing, so that if the easy and second release backings of the second strip are separated, the adhesive stays attached to the second release backing.

[0010] The image transfer system provides a "kit" for preparing transfers. The first and second strips may be supplied to a printer who can print an image on the first strip, remove the easy release backing (if supplied) on the second strip and adhere the printed side of the first strip to the second strip. The individual transfers can then be die cut.

[0011] The transfer may be a dry transfer in which the transfer adhesive requires no re-moistening. The adhesive may be a high tac adhesive.

[0012] The release value of the transparent layer against the first release backing may be at least twice that of the second release backing against the transfer adhesive so that when the tattoo labels are released from the backing the adhesive layer remains on the printed side. The release value is a measure of the ease with which the backing can be pulled off.

[0013] The transparent layer may be varnish such as a water-based acrylic varnish or a UV varnish.

[0014] The second strip may be a transfer adhesive double backing in which adhesive is sandwiched by the two backing layers. The second strip may be a transfer double tac.

[0015] A silicone layer or layers may be provided between the releasable backings and the adjacent transparent and/or transfer adhesive layer.

[0016] According to a third aspect of the invention, there is provided a transfer comprising

a first release backing
a transparent layer under the first release backing,
an adhesive layer under the transparent layer and
a second release backing under the adhesive layer,
wherein
the transparent layer is printed on the underside of the transparent layer so that the print faces the adhesive layer

[0017] A specific embodiment of the invention will now be described, purely by way of example, with reference to the accompanying drawings, in which:-

Figure 1 shows a first strip for use in the invention;
Figure 2 shows a second strip for use in the invention;
Figure 3 shows an alternative form of the second strip;
Figure 4 illustrates the process according to an embodiment of the invention, and
Figure 5 shows the transfer attached to an application surface.

[0018] Referring to Figure 1, a first strip 11 has a back-

ing 13 made of 40-170 g/m^2 kraft paper, 40-90g/m^2 glassine paper or 23-100μm thick polyester. A water-based silicone layer 15 is applied to the top of the backing with a coating weight 0.01-0.05 g/m^2. Depending on the nature of the substrate, silicone coating may not be required and varnish applied directly on the substrate. A transparent varnish 17 is applied to the silicone at 4-8 g/m^2. The varnish may be water-based acrylic varnish or UV varnish.

[0019] Figure 2 shows the second strip 21 in the form of a transfer adhesive double backing. The second strip 21 has a central layer of transfer adhesive 23. Silicone layers 25 at a weight 1 ± 0.3 g/m^2 are provided on either side of the transfer adhesive 23. For polyester films instead of paper, a lower silicone weight of 0.7 ± 0.2 g/m^2 can be used. A tight release backing 27 is provided on one side of the transfer adhesive double backing, and an easy release backing 29 on the opposite side. The tight release backing adheres in the adhesive more tightly than the easy release backing. The backings may be made of the same materials as suggested for the first strip or 30-60μm thick polypropylene. The adhesive may be a water-based adhesive or a modified acrylic adhesive.

[0020] To manufacture this second strip 21, each of the backing papers 27,29 are first coated with a silicone layer 25. The exact choice of the silicone material is different for the tight release layer and the easy release layer, as is known. Adhesive is then coated on the silicone layer of the tight release backing at a weight 23 ± 2 g/m^2, and the two films are then laminated together to produce the structure shown in Figure 2.

[0021] Figure 3 shows an alternative second strip 31 in the form of a transfer double tac. In this structure, the structure of Figure 2 having the two backings, the two silicone layers and the transfer adhesive, is mounted on a further transfer adhesive 33 on a further silicone layer 35 which in turn is mounted on a third backing 37.

[0022] It should be noted that in all of the above, the silicone layer need not be essential if the backing has the correct adherent properties without it. This is particularly likely where the backing is made of polyethylene, polypropylene or polyester.

[0023] The first and second strips as described above may be provided for the production of transfers by the method that will now be described.

[0024] Referring to Figure 4A, the first step is to print an image 41 onto the transparent varnish layer 17 of the first strip 11. The image is printed inverted so that it will appear correctly when viewed through the transparent varnish when the transfer is finally applied.

[0025] The next step is to remove the easy release backing 29 of the second strip, which will take substantially all of the adjoining silicone layer 25 with it. This will leave the transfer adhesive 23 exposed. The first strip 11 is then laminated to the second strip 21,31, by applying the image side having the printed ink 41 against the exposed transfer adhesive 23.

[0026] Referring to Figure 4C, individual transfers 51 can now be die cut by cutting through the first strip and through the adhesive layer of the second strip, leaving the tight release backing 27 attached. Waste 53 may then be stripped from between the printed transfer elements.

[0027] This produces the finished transfer.

[0028] It should be noted that the moisture content of the first and second strips can be adjusted so that the complex of the first and second strip remains flat. Furthermore, the release value of the first release backing on the varnished layer can be at least twice that of the release value of the adhesive against the tight release backing.

[0029] In order to apply the transfer, the die-cut transfer is removed from the tight release backing. To make this easier, the tight release backing can be cut in a separate process, for example, by die-cutting in the middle of transfer sheet.

[0030] The exposed transfer adhesive may then be applied to the application surface. This may be paper, clothes or skin depending on the choice of adhesive. After a short period applying pressure, for example between 30 seconds and 2 minutes, the first release backing 13 may be removed from the surface. Because of the silicone layer 15 between the transparent varnish layer 17 and the first release backing 13, the first release backing can be easily removed.

[0031] The tattoo image is now visible on the application surface and protected by the transparent varnish layer 17.

[0032] It is preferred to use an entirely dry process, where no re-moistening is required, and this can be achieved by a suitable choice of transfer adhesive as is well known. For example, the transfer adhesive may be a modified acrylic adhesive as mentioned above.

[0033] Another application for this product is security labels. For example, the backing (13) on Fig 1 can be printed with standard ink and/or UV ink in order to provide a security label after adhesive transfer with Fig 2. This label can be applied as visa for passport. As you remove the backing 13, the transfer image (41) remains on the passport and cannot be removed without being destroyed. The UV inks give you another security system to be disclosed by using a UV lamp.

[0034] In a different way, the transfer can also be used for closing envelopes or documents like a security stamp. The strip (11) is printed on both sides. On the side (17) to which adhesive will be applied the message "opened or void" may be printed. On the other side a chosen logo or special design may be applied.

[0035] In use the label is applied on the envelope like a wax seal may be applied. When somebody trys to open the envelope it will be necessary to peel off the sheet 13 so that the message "opened or void" will appear and as the sheet 13 is not sticky the envelope cannot be resealed. Exactly in the same way, the transfer can be used for price labelling, to avoid a customer dis-

honestly exchanging price labels.

[0036] Other security applications can be created from the same principle.

Claims

1. A method of manufacture of a transfer comprising

providing a first strip (11) having a transparent layer (17) on a first release backing (13),
printing an image (41) onto the transparent layer (17),
providing a second strip (21) having a layer of transfer adhesive (23) and a second release backing (27) on one side of the transfer adhesive, and
laminating the printed side of the first strip (11) to the second strip (21) on the opposite side of the transfer adhesive (23) to the second release backing (27).

2. A method according to claim 1 wherein the second strip has an easy release backing (29) on the opposite side of the transfer adhesive (23) to the second release backing (27), and the method further comprises the step of

removing the easy release backing (29) before the step of laminating the first strip (11) to the second strip (13).

3. A method according to claim 1 or 2 in which

individual transfers (51) are die cut by cutting through the first strip (11) and the second strip (21) up to the second release backing (27) after the two strips are laminated together.

4. A method according to any preceding claim wherein waste (53) between individual transfers (51) is stripped from the transfers after die cutting.

5. An image transfer system comprising

a first strip (11) having a transparent layer (17) on a first release backing (13), and
a second strip (21) having a layer of transfer adhesive (23) and a second release backing (27) on one side of the transfer adhesive (23).

6. An image transfer system according to claim 5 in which a print layer (41) is provided on the transparent substrate (17) on the opposite side to the first release backing (13) and the first strip (11) is laminated against the second strip (21) with the print layer (41) against the transfer adhesive (43).

7. An image transfer system according to claim 5 further comprising an easy release backing (29) on the other side of the transfer adhesive (23) to the second release backing (27).

8. An image transfer system according to claim 7 wherein the release value of the transparent layer (17) against the first release backing (13) is at least twice that of the second release backing (27) against the transfer adhesive (23) so that when the transfers (51) are released from the second release backing (27) the transfer adhesive (23) remains on the printed side.

9. An image transfer system according to any of claims 5 to 7 wherein in which the transfer adhesive requires no re-moistening so that the image transfer system is a dry transfer.

10. An image transfer system according to claim 8 wherein the adhesive (23) is a high tac adhesive.

11. An image transfer system according to any of claims 5 to 10 wherein the transparent layer (17) is varnish.

12. An image transfer system according to any of claims 9 to 11 wherein a silicone layer or layers (25) is provided between the releasable backing or backings (13, 27, 29) and the transparent layer (17) and/or the transfer adhesive (23).

13. A transfer comprising

a first release backing (13)
a transparent layer (17) under the first release backing (13),
an adhesive layer (23) under the transparent layer (17) and
a second release backing (27) under the adhesive layer, wherein
print (41) is provided on the underside of the transparent layer so that the print (41) faces the adhesive layer (27).

14. A transfer according to claim 13 wherein a message is printed on the top of the first release backing (13).

15. A transfer according to claim 13 or 14 wherein the print (41) carries a security warning.

16. A transfer according to claim 15 wherein the security warning (41) is ultraviolet sensitive.

17. Use of a transfer according to claim 15 or claim 16 as a security label such that if the first release backing (13) is peeled away the security warning (41) is revealed.

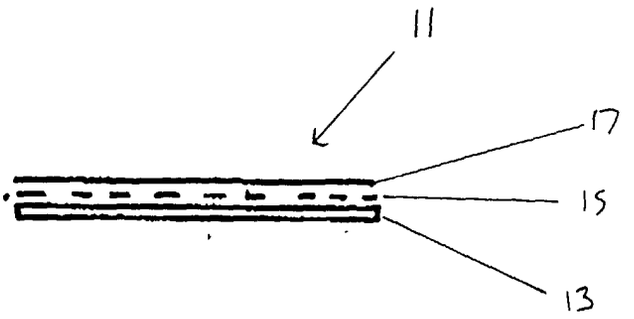

Fig. 1

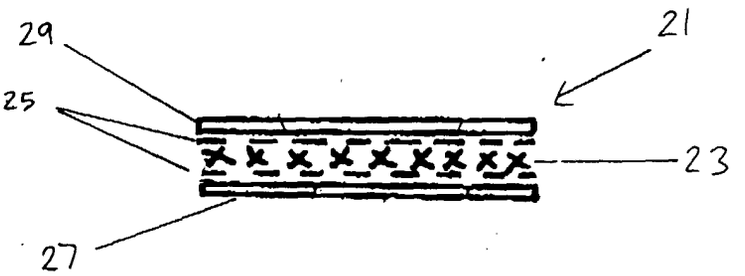

Fig. 2

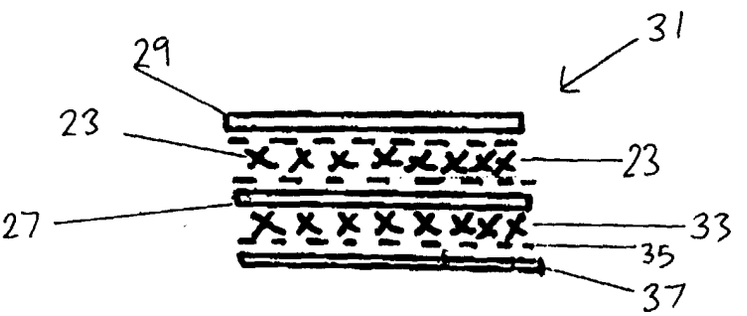

Fig. 3

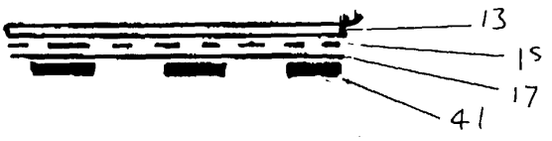

Fig. 4a

Fig. 4b

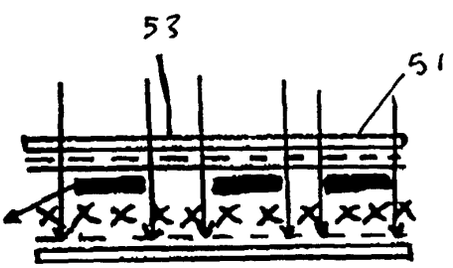

Fig. 4c

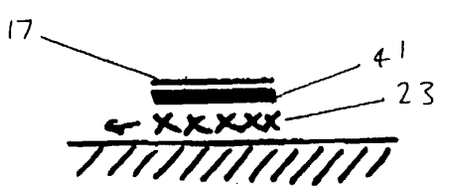

Fig. 5