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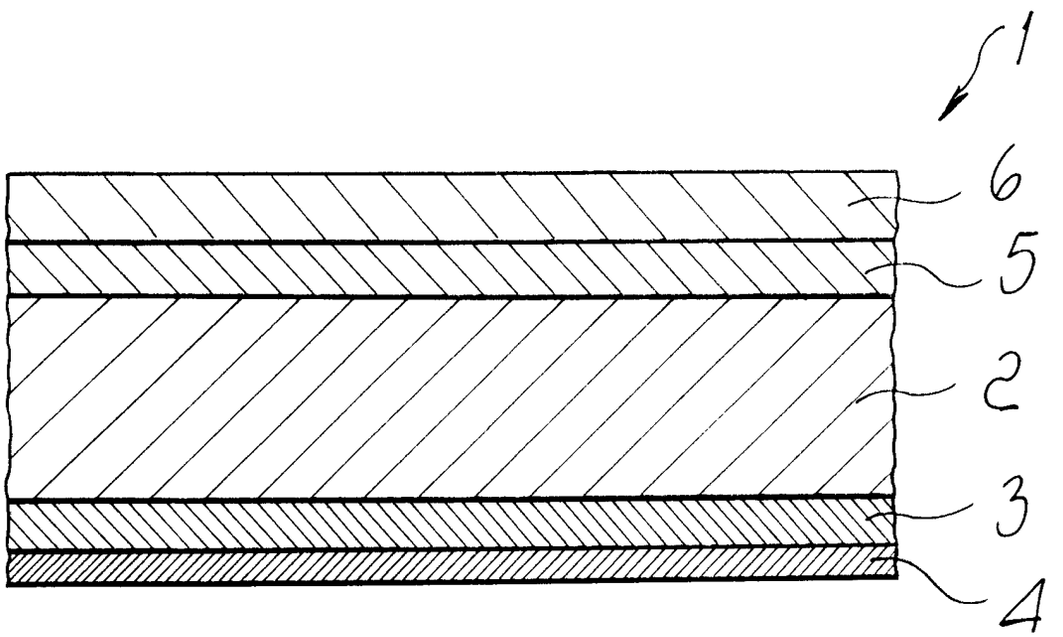
(54) Plate-like element for image transfer processes with sublimating inks

(57) A plate-like element for image transfer processes with sublimating inks, comprising a supporting layer which is constituted by an elastically flexible film on at least one face of which a layer of fibers is present on which a layer with sublimating inks is applied.



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Description

[0001] The present invention relates to a plate-like element for image transfer processes with sublimating inks.

[0002] It is known that printing processes using sublimating inks transfer an image printed with sublimating inks on a medium, commonly known as transfer medium, onto another medium or object known as imprintable material.

[0003] In order to perform the transfer it is necessary for the transfer medium to be perfectly in contact with the imprintable material, so that during the sublimation step the inks can be transferred perfectly onto the imprintable surface.

[0004] These sublimation processes are currently performed by using transfer media or supporting layers made of paper-like material or the like which have excellent image transfer properties when the imprintable element has an absolutely flat surface.

[0005] If instead the imprintable material has an irregular surface, for example concave or convex and so forth, currently it is not possible to use supports made of paper-like material since considerable defects would occur in the transferred image due to the unavoidable creases.

[0006] In order to try to solve this problems, supporting layers or transfer media have already been used which are produced by using elastic materials, such as elasticated cotton fabrics on which the images to be sublimated are applied; this kind of application, however, has considerable drawbacks arising from the extremely high costs of the fabrics that have to be used and from the poor definition of the image caused by the type of supporting layer which inevitably has a weave which can be transferred to the image.

[0007] The aim of the present invention is to eliminate the above-noted drawbacks, by providing a plate-like element for image transfer processes with sublimating inks which can adapt even to uneven surfaces, maintaining at all times optimum image quality with a high degree of definition.

[0008] Within the scope of this aim, a particular object of the invention is to provide a plate-like element which can be processed with the processes currently already in use for image transfer with sublimating inks but allows automatic adaptation to all the surfaces being treated.

[0009] Another object of the present invention is to provide a plate-like element which, by way of its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

[0010] Another object of the present invention is to provide a plate-like element which can be easily obtained starting from commonly commercially available elements and materials and is also competitive from a purely economical point of view.

[0011] This aim, these objects and others which will become apparent hereinafter are achieved by a plate-like element for image transfer processes with sublimating inks, according to the invention, characterized in that it comprises a supporting layer constituted by an elastically flexible film on at least one face of which a layer of fibers is present on which a layer with sublimating inks is applied.

[0012] Further characteristics and advantages will become apparent from the description of a preferred but not exclusive embodiment, illustrated only by way of non-limitative example in the accompanying drawing, wherein the only figure is a view of the plate-like element, shown layered in order to clearly illustrate its components.

[0013] With reference to the only figure, the plate-like element for image transfer processes with sublimating inks, generally designated by the reference numeral 1, is constituted by a supporting layer 2 which is advantageously provided by an elastically flexible film which is advantageously of the thermoplastic type and is constituted by an 80-micron polythene film which has the elasticity characteristics required to be able to adhere to the most disparate shapes of the imprintable material.

[0014] The materials used for the layer 2 can be of various kinds; the particular characteristic that they must have is that they must soften, without melting, at temperatures between 140° and 180°C; the thickness also can be varied broadly without altering the concept that the layer 2 must apply a mechanical supporting action and that a reduced thickness allows to reduce the amount of heat to be supplied for heating.

[0015] A layer of fibers 3 is applied, by interposing a layer of adhesive, to one face of the supporting layer 2; said layer of fibers is constituted by micronized fibers which can be vegetable fibers, such as cellulose and the like, or synthetic fibers.

[0016] The layer of fibers is preferably produced with a flocked product which can be constituted by gloss or mat rayon with fibers 0.3 to 4 mm long and with a titer of 0.75 to 3.3 dtex; by semi-mat or gloss nylon with fibers measuring 0.4 to 4 mm and with a titer of 0.9 to 3.3 dtex; by micronized milled cotton flock or by other natural or synthetic materials capable of providing a layer with a uniform surface.

[0017] Experimental tests have shown that the cotton flock yields the best results, because the cellulose that constitutes the cotton repels the inks during sublimation and does not alter at 180-250°C and does not change its characteristics under the action of pressure and temperature.

[0018] The presence of the flock layer is very important, since when vacuum is produced it allows the full evacuation of the air, with perfect contact between the image to be sublimated and the body onto which the image is imprinted.

[0019] The microfiber layer anchors to the supporting layer and provides the region where the layer 4, obtained with sublimating inks, can be applied.

[0020] The layer with sublimating inks can be applied

by using normal printing methods such as offset printing, screen printing, rotogravure and so forth.

[0021] Ordinary sublimating inks are normally used, allowing to ensure optimum image transfer.

[0022] In order to give better properties to the supporting layer on the face of the layer 2 that lies opposite to the one provided with the microfibers, there is provided a silicone layer 5 provided by means of a silicone layer which is interposed between said supporting layer and an outer layer 6 of adhesive-coated paper, which has the mechanical purpose of making the assembly constituted by the various layers relatively rigid if the image to be sublimated is to be offset- and screen-printed; the paper layer is not strictly necessary if printing is performed by rotogravure with machines used for flexographic printing.

[0023] The layer 6 of paper-like material, after the application of the sublimating inks, has completed its task and is accordingly eliminated by separation.

[0024] The silicone layer, which can optionally be omitted, performs various functions, such as facilitating the separation of the adhesive-coated paper 6 before using the plate-like element for the sublimation process; moreover, during the process it prevents the sticking of the supporting layer to the body that produces pressure in order to place the film in contact with the imprintable material.

[0025] In practice, the silicone layer, which has good thermal resistance, protects and keeps intact the supporting layer, which generally has a low resistance to the sublimation temperature, which can be assumed to be approximately 180°C.

[0026] With the above-described arrangement, it is therefore possible to have a plate-like element which can adapt to the various shapes of the surface of the imprintable material, allowing image transfer achieved with sublimating inks, with extremely high quality and without having defects in the image definition step, by way of the perfect adhesion that can be achieved by the elastically flexible layer and by the presence of the microfibers, which allow complete evacuation of the air, with optimum contact between sublimating inks and imprintable body.

[0027] In the practical execution of the plate-like element, a layer of silicone is preferably printed by spreading onto the film, which is for example made of polythene and constitutes the supporting layer, after the corona treatment, whereas the layer of cellulose microfibers or micronized cotton is applied to the opposite face with the flocking system on an interposed adhesive layer.

[0028] Coupling with adhesive-coated paper on the silicone-treated side is then performed and the sublimating inks are applied to the face provided with the microfibers.

[0029] Once these operations have been performed, the adhesive-coated paper is eliminated, obtaining in practice a multilayer plate-like element which constitute a sublimating transfer medium measuring approximately 100 microns.

[0030] From the above description it is thus evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that a plate-like element for image transfer processes with sublimating inks is provided which radically modifies the technology currently in use, allowing to adapt to any kind of surface of the imprintable element, by way of the possibility of the supporting layer to automatically adapt by elastic flexing.

[0031] It should be noted that this type of supporting layer eliminates all the drawbacks noted in the prior art when using elastic fabrics, which in addition to being far too expensive did not allow good image definition.

[0032] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0033] All the details may also be replaced with other technically equivalent elements.

[0034] In practice, the materials employed, so long as they are compatible with the specific use, as well as the contingent shapes and the dimensions, may be any according to requirements.

[0035] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A plate-like element for image transfer processes with sublimating inks, characterized in that it comprises a supporting layer which is constituted by an elastically flexible film on at least one face of which a layer of fibers is present on which a layer with sublimating inks is applied.

2. A plate-like element according to claim 1, characterized in that said supporting layer is constituted by a polythene film.

3. A plate-like element according to the preceding claims, characterized in that said fibers are applied by means of a layer of adhesive material.

4. A plate-like element according to one or more of the preceding claims, characterized in that said fibers are constituted by microfibers.

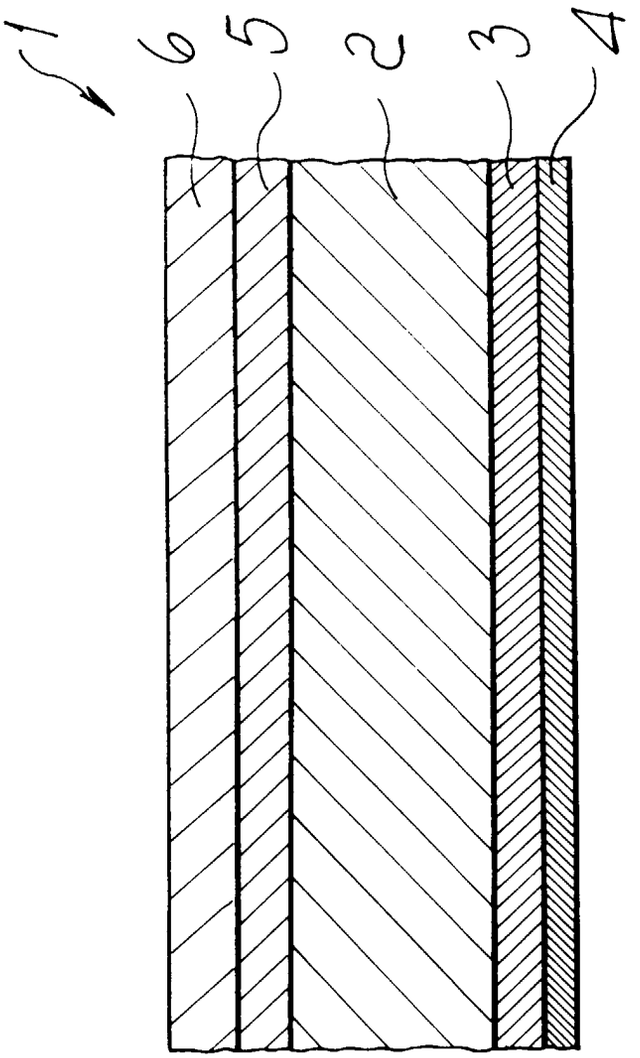
5. A plate-like element according to one or more of the preceding claims, characterized in that said microfibers are cellulose microfibers.

6. A plate-like element according to one or more of the

preceding claims, characterized in that said microfibers are microfibers of synthetic materials.

7. A plate-like element according to one or more of the preceding claims, characterized in that it comprises a layer of silicone on said supporting layer, on the opposite side with respect to said layer of fibers.

8. A plate-like element according to one or more of the preceding claims, characterized in that it comprises, on said silicone layer, a layer of adhesive-coated paper which can be eliminated before the plate-like element is applied to the surface of the imprintable material.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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 9086

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 March 2000	Bacon, A

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