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(54) Transparent transfer film

(57) It employs a biodegradable material with lower production costs than conventional paper, without limit of the number of colours which it receives and allowing to centre the image, reducing time and adjustment costs in its application, with a transfer film made from different plastic materials with a suitable transparency and which may withstand temperatures around 120 °C, from high density and high molecular mass polyethylene, with the film printed with elastic vinyl water ink incorporating or not a solvent base, using a serigraphic method followed by air drying and recovery of said film.

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Description

OBJECT OF THE INVENTION

[0001] The invention here disclosed relates to a transparent transfer film, from printed films meant for thermal transfer of the images which they bear, particularly in shoes.

[0002] This invention is characterised by a special construction of the transfer film from several plastic materials, preferably high-density polyethylene, which has the advantage of lower production and application costs, the latter due to the ease and speed in placing because of its transparent nature.

BACKGROUND OF THE INVENTION

[0003] Thermal transfer films for all types of prints are widely known and used for a large variety of consumer products, so that no further explanation is required, as the term "transfer film" has even extended beyond technical language into everyday speech.

[0004] The problems with its application result on one hand from the surface which is to receive the printed image, the more complicated for polished surfaces, becoming nearly impossible for lapped surfaces or surfaces with a similar finish unless special techniques and products are used.

[0005] The other disadvantage is the cost of paper, so that methods for recovering it for use in later applications have even been used.

[0006] The problems become even greater for multiple printings, as because of the reduced paper weight there is a limit for the number of layers of different colour to apply, as the paper eventually gives, and thus the desired number of colours, and with it the multicolour transfer are never obtained.

[0007] In addition to all of the above is the degradation of the environment, with this technique contributing to the destruction of forests.

[0008] In any event, the few world manufacturers of this type of paper have not extended its use for other film products, and in some applications such as shoe cutting, centering the image in each cut unnecessarily limits the application and makes it more expensive, as the proper location must be manually checked, a slow process and subject to human errors.

[0009] The applicant is unaware of experiences which have used the insight of employing transparent transfer films, made from plastic materials, of the characteristics and advantages of the one here disclosed.

DESCRIPTION OF THE INVENTION

[0010] The invention object of the present memory relates to a transparent transfer film, from among printed films such as with inks with pigments mixed with grease and linseed oil, or others with several copolymers which carry printing inks and pastes, all of these suitable for thermal transfer from the paper of the images they bear.

[0011] This invention applies particularly to shoes, although the film disclosed can be used in many other applications, such as leather goods or the textile industry, where centering an image is required or desired.

[0012] This invention is characterised by a particular construction of the transfer film, from several plastic materials which can withstand changing temperatures without wrinkling, which do not exceed or barely exceed 120 °C, as well as having the thickness required for each working temperature range, preferably high density plastics such as polyethylene.

[0013] These films have a low cost of production and application, the latter resulting from the ease and speed in placing the film in position, directly and without readjustment, on the object which is to receive the print, such as a shoe cut, due to the transparency of the film.

[0014] In its preferred application the film receives the ink by serigraphy, although other printing processes are not discarded, and the ink is of the water ink type.

[0015] Unlike transfer paper films which use a drying oven, the printed film is simply air dried, placed on conventional drying racks for serigraphy material.

[0016] Depending on the working temperature for each case, the material of the film may or may not be recoverable for recycling in further applications, as in the extreme limit it may wrinkle, in which case re-use is not recommended as it is no longer flat, with the used product simply recycled as chaff.

PREFERRED EMBODIMENT OF THE INVENTION

[0017] In view of the above, the present invention relates to a transparent transfer film from among printed films meant for thermal transfer of the images they bear, essentially characterised in that a biodegradable material is used, not affecting the ecological balance and with lower production costs than conventional paper, with no limit to the number of colours which it may receive, and furthermore allowing to centre the image, thus saving adjustment time and costs when placing it, by means of a special construction of the transfer film using several plastic materials with suitable transparency which may withstand without wrinkling temperatures of at most 120 °C or not much higher, as well as made with the thickness required for each working temperature range, preferably from high density plastic materials with a high molecular mass, such as polyethylene.

[0018] The film preferably receives the ink by serigraphy, although other printing processes are not discarded and the printed film is simply air dried, placed on conventional drying racks for serigraphy material. The material of the film may be recovered for recycling in further applications or as chaff.

[0019] The composition employed can vary, with two having been chosen:

[0020] - Elastic ink known as Serylon, vinyl based and

incorporating a solvent base, from F. Lili Manoukian Volonterio S.p.A., Industri Chimica.

[0021] Base V6 from Navi, S.L., also vinyl based, specifically polyvinyl acetate.

[0022] Pigments of either ink are from Corec S.L..

[0023] The common support for both cases is a polyethylene known as HE-6991, with antioxidant, from Thermoplast S.L., of high density and high molecular mass and suitable transparency for the purposes of this invention.

[0024] The essence of this invention is not altered by variations of materials, shape, size or arrangement of the constituent elements, described in a non limiting manner, with this description sufficing for its reproduction by an expert in the field.

Claims

1. Transparent transfer film, from among printed films meant for thermal transfer of the images they bear, **characterised in that** it employs a biodegradable material which does not affect the ecological balance and with lower production costs than conventional paper, without limit of the number of colours which it receives and furthermore allowing to centre the image, reducing time and adjustment costs in its application, using a special construction of the transfer film from different plastic materials with a suitable transparency and which may withstand temperatures of 120 °C or not much higher, as well as having the required thickness for each range of working temperatures, with these plastic materials preferably having a high density and high molecular mass.

2. Transparent transfer film, as claimed in above claim, **characterised in that** the film printing with water based ink is performed with a serigraphic method, and **in that** once the film receives the image to be transferred it is air dried, placed on drying racks for serigraphic material.

3. Transparent transfer film, as claimed in above claims, **characterised in that** the film material is later recovered and recycled, either for further applications or as chaff.

4. Transparent transfer film, as claimed in above claims, **characterised in that** it employs elastic vinyl ink which may or may not incorporate a solvent base.

5. Transparent transfer film, as claimed in above claims, **characterised in that** the vinyl ink is made from polyvinyl acetate.

6. Transparent transfer film, as claimed in above claims, **characterised in that** the high-density and high molecular mass plastic material support employed is polyethylene.

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EUROPEAN SEARCH REPORT

Application Number
EP 00 50 0122

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	US 4 707 404 A (MORISHITA SADAO ET AL) 17 November 1987 (1987-11-17) * column 4, line 24 - line 28; claims 1-7; examples 1,3 *	1,3,6 2,4,5	B41M5/025
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Y	WO 98 51491 A (TETRA LAVAL HOLDINGS & FINANCE ;KARLSSON CHRISTER (SE); JOHANSSON) 19 November 1998 (1998-11-19) * claims 1,7; figure 1 *	1,2	
Y	EP 0 057 759 A (IBM) 18 August 1982 (1982-08-18) * claims 1,6 *	4,5	
A	EP 0 255 144 A (SHOWA DENKO KK) 3 February 1988 (1988-02-03) * column 4, line 16 - line 38; claim 1 *		TECHNICAL FIELDS SEARCHED (Int.Cl.7) B41M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 October 2000	Philosoph, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 50 0122

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82