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(54) **Reversible varnishing plate**

(57) Varnishing plate comprising at least one support layer (3) arranged between at least two varnishing surfaces (1, 2), wherein both surfaces of the support layer

(3) are coated by a removable adhesive (5), so that both varnishing surfaces (1, 2) can be detached from the support layer (3).

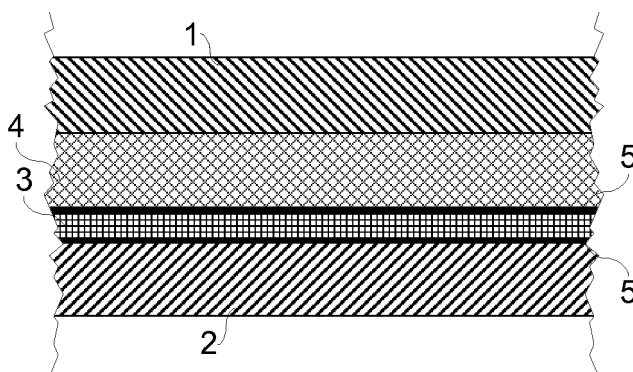


Fig.1

Description

[0001] The present invention relates to a varnishing plate, and in particular to a reversible varnishing plate, known also with the name of varnishing caoutchouc, which can be employed in the printing machines for offset printings.

[0002] US 6205922 discloses a reversible printing blanket, therefore not a varnishing plate, comprising at least one support layer arranged between two printing surfaces, wherein one or more polymeric layers are firmly joined between the support layer and the printing surfaces.

[0003] The printing surfaces and/or the polymeric layers have different physical and/or chemical characteristics, so that with the same blanket two different printing processes can be carried out by simply reversing the printing blanket.

[0004] It is therefore an object of the present invention to provide a varnishing plate, which can be employed for more than two different printing processes. Said object is achieved with a varnishing plate, whose main features are disclosed in the first claim, while other features are disclosed in the remaining claims.

[0005] Thanks to a removable adhesive on the surfaces of the support layer, both varnishing surfaces of the varnishing plate according to the present invention can be partially detached from the support layer, so that a varnishing surface or the opposite surface can be employed by reversing the varnishing plate.

[0006] Different configurations of the varnishing plate can be obtained by employing polymeric layers which allow an easier removal of a varnishing surface from the support layer and/or compressible layers which allow to absorb thickness differences or irregularities, if any, of the support to be varnished and/or stabilizing layers which reduce the movements in the directions parallel to the varnishing surface.

[0007] Further advantages and features of the varnishing plate according to the present invention will become clear to those skilled in the art from the following detailed and non-limiting description of seven embodiments thereof with reference to the attached drawings, wherein:

- figures 1 to 7 show a sectioned view of each embodiment.

[0008] Referring to figure 1, it is seen that the varnishing plate according to the first embodiment comprises in a known way at least two varnishing surfaces 1, 2, for example of nitrile rubber, butyl rubber, EPDM (Ethylene-Propylene-Diene-Monomer) rubber, SBR (Styrene Butadiene Rubber) rubber, polyurethane, polypropylene, polyethylene, PVC (polyvinyl chloride) or other thermosetting or thermoplastic elastomers, having a thickness comprised between 0,02 mm and 1 mm and/or a hardness comprised between 30 and 95 ShA (Shore A).

[0009] At least one support layer 3 is arranged be-

tween varnishing surfaces 1, 2 and is made for example of a paper material, plastic material such as polyester, polyethylene, polypropylene, PVC, PMMA, PC, or metallic material such as aluminum or steel. Support layer 3 has a thickness comprised between 0,05 and 1 mm and/or a Young Module comprised between 1000 MPa and 15000 MPa (ASTM) and/or a break resistance comprised between 5 and 500 MPa (ASTM).

[0010] At least one polymeric layer 4 is arranged between support layer 3 and varnishing plates 1 and/or 2. In particular, the polymeric layer is joined to varnishing plate 1. Polymeric layer 4 comprises for example adhesive resins polyester-based, polyurethane-based, epoxy, NBR rubber, EPDM rubber or other thermoplastic or thermosetting elastomers. Polymeric layer 4 has a thickness comprised between 0,02 mm and 1 mm and/or a hardness comprised between 30 and 95 ShA (Shore A).

[0011] Both surfaces of support layer 3 are coated by a removable adhesive 5, so that varnishing surface 2 and/or polymeric layer 4 joined to varnishing surface 1 can be detached from support layer 3. The adhesive force of removable adhesive 5 is lower than 0,6 N/mm, in particular lower than 0,2 N/mm and greater than 0,01 N/mm (ISO 32 or ISO 8510-2).

[0012] Referring to figure 2, it is seen that the varnishing plate according to the second embodiment comprises a further polymeric layer 6 arranged between support layer 3 and varnishing surface 2.

[0013] Referring to figure 3, it is seen that the varnishing plate according to the third embodiment comprises at least one compressible layer 7 arranged between support layer 3 and varnishing surface 2. Compressible layer 7 comprises a layer in an expanded polymeric material with closed cells and/or can contain microspheres. For example, compressible layer 7 can comprise a thermosetting elastomer made of NBR (Nitrile Butadiene Rubber), EPDM, IR (Isoprene Rubber), IIR (Isobutene Isoprene Rubber) rubber. Compressible layer 7 has a thickness comprised between 0,1 mm and 1 mm, and a density lower than 1,4 Kg/dm³. The density of compressible layer 7 is preferably lower than the density of polymeric layers 4 and/or 6.

[0014] Referring to figure 4, it is seen that the varnishing plate according to the fourth embodiment comprises at least one stabilizing layer 8 arranged between support layer 3 and varnishing surface 2, in particular between polymeric layer 6 and varnishing surface 2. Stabilizing layer 8 comprises for example a technical fabric or a thin layer of polyester with a thickness of 0,5 mm or a high-tenacity elastomeric layer reinforced with natural, polymeric or metallic short fibers. Said technical fabric can be for example a cotton fabric with 23 warp yarns per cm and 18 weft yarns per cm, having a thickness of 0,35 mm and a break load of about 500 N. For example, for the same purpose a high-tenacity polymeric layer can be used, such as for example a thermosetting polyurethane or other thermosetting elastomer, reinforced with fibers made of Polyvinyl alcohol (PVA), Kevlar, steel or other

resistant fibers.

[0015] Referring to figure 5, it is seen that the varnishing plate according to the fifth embodiment comprises a stabilizing layer 8 arranged between support layer 3 and varnishing surface 2, in particular between compressible layer 7 and varnishing surface 2.

[0016] Referring to figure 6, it is seen that the varnishing plate according to the sixth embodiment comprises two support layers 3 which are provided with a removable adhesive 5 on one or both surfaces and are arranged between varnishing surfaces 1, 2, in turn joined to a first polymeric layer 4 and/or to a second polymeric layer 6, respectively. A compressible layer 7 and/or a polymeric layer are arranged between support layers 3.

[0017] Referring to figure 7, it is seen that the varnishing plate according to the seventh embodiment comprises a support layer 3 arranged between two polymeric layers 4, 6, wherein a compressible layer 7 is arranged between polymeric layer 6 and varnishing surface 2.

[0018] Removable adhesive 5 can include and/or consist of any surface treatment or substance which are not adhesive in themselves but which allow the joining in a removable manner and therefore the easy removal of varnishing surfaces 1, 2 from support layer 3. In particular, said substance can be a thermo-activable substance applied to the surfaces of support layer 3 and/or to the surfaces contacting the latter before the vulcanization of varnishing surfaces 1, 2 together with support layer 3, so that during this vulcanization said joining to support layer 3 is obtained.

[0019] Further modifications and/or additions may be made by those skilled in the art to the hereinabove disclosed and illustrated embodiments while remaining within the scope of the following claims.

Claims

1. Varnishing plate comprising at least one support layer (3) arranged between at least two varnishing surfaces (1, 2), **characterized in that** both surfaces of the support layer (3) are coated by a removable adhesive (5), so that both varnishing surfaces (1, 2) can be detached from the support layer (3).
2. Varnishing plate according to the previous claim, **characterized in that** the adhesive force of the removable adhesive (5) is lower than 0,6 N/mm, in particular lower than 0,2 N/mm and greater than 0,01 N/mm (ISO 32 or ISO 8510-2).
3. Varnishing plate according to one of the previous claims, **characterized in that** the support layer (3) has a thickness comprised between 0,05 mm and 1 mm and/or a Young Module comprised between 1000 MPa and 15000 MPa (ASTM) and/or a break resistance comprised between 5 and 500 MPa (ASTM).

4. Varnishing plate according to one of the previous claims, **characterized in that** at least one polymeric layer (4; 6) is arranged between the support layer (3) and a varnishing surface (1, 2).
5. Varnishing plate according to the previous claim, **characterized in that** the polymeric layer (4; 6) has a thickness comprised between 0,02 mm and 1 mm.
6. Varnishing plate according to one of the previous claims, **characterized in that** at least one compressible layer (7) is arranged between the support layer (3) and a varnishing surface (2).
7. Varnishing plate according to the previous claim, **characterized in that** the density of the compressible layer (7) is lower than the density of the polymeric layer (4; 6).
8. Varnishing plate according to claim 6 or 7, **characterized in that** the compressible layer (7) is arranged between a polymeric layer (6) and a varnishing surface (2).
9. Varnishing plate according to one of the previous claims, **characterized in that** at least one stabilizing layer (8) is arranged between the support layer (3) and a varnishing surface (2).
10. Varnishing plate according to the previous claim, **characterized in that** the stabilizing layer (8) is arranged between a polymeric layer (6) and a varnishing surface (2).
11. Varnishing plate according to claim 9 or 10, **characterized in that** the stabilizing layer (8) is arranged between a compressible layer (7) and a varnishing surface (2).
12. Varnishing plate according to one of the previous claims, **characterized in that** two support layers (3) are arranged between the varnishing surfaces (1, 2), wherein a compressible layer (7) and/or a polymeric layer are arranged between the support layers (3).

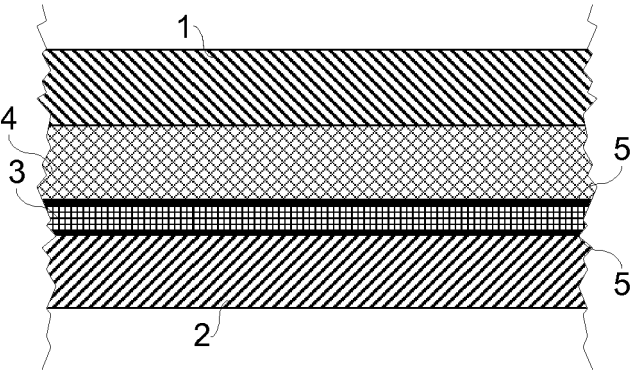


Fig.1

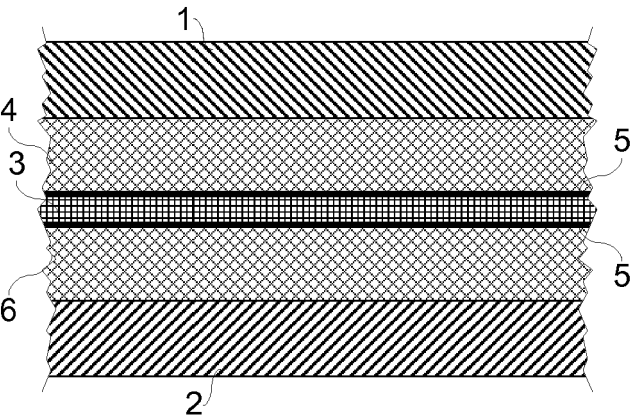


Fig.2

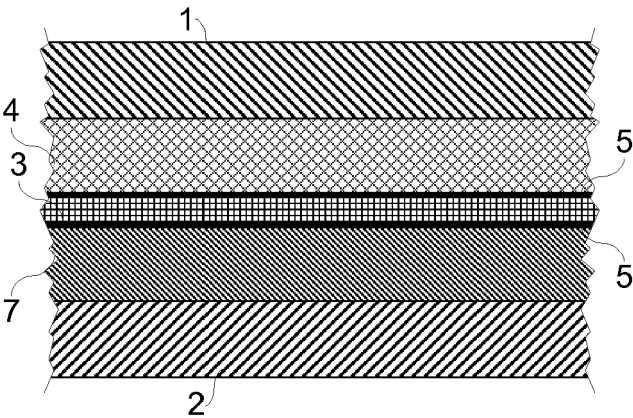


Fig.3

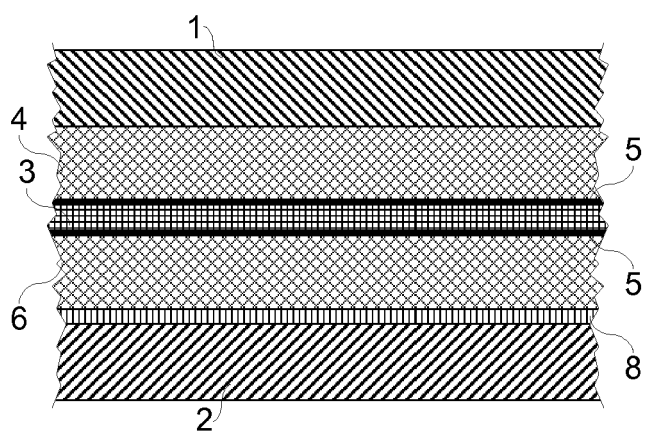


Fig.4

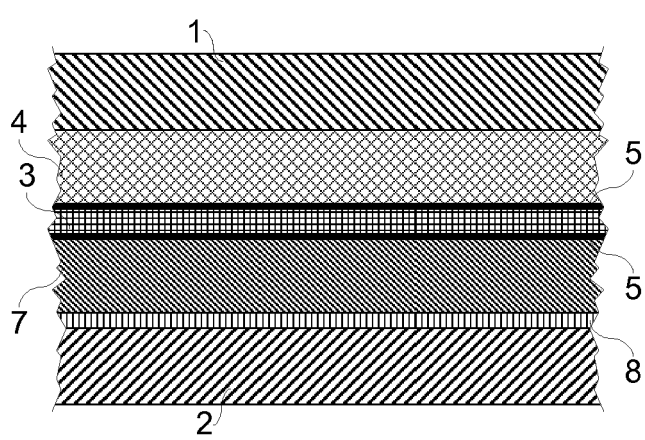


Fig.5

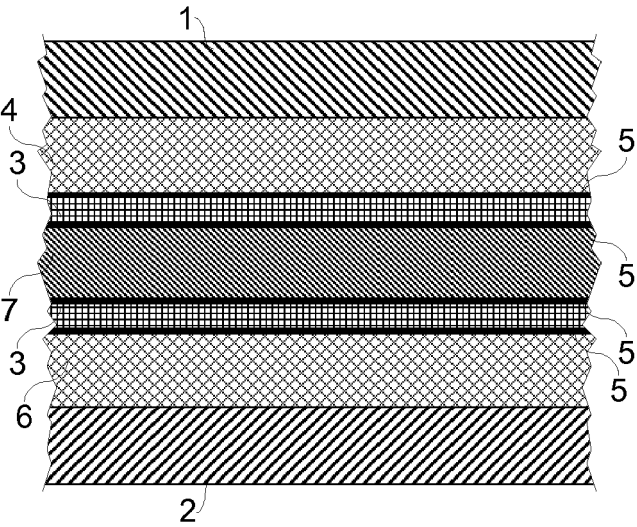


Fig.6

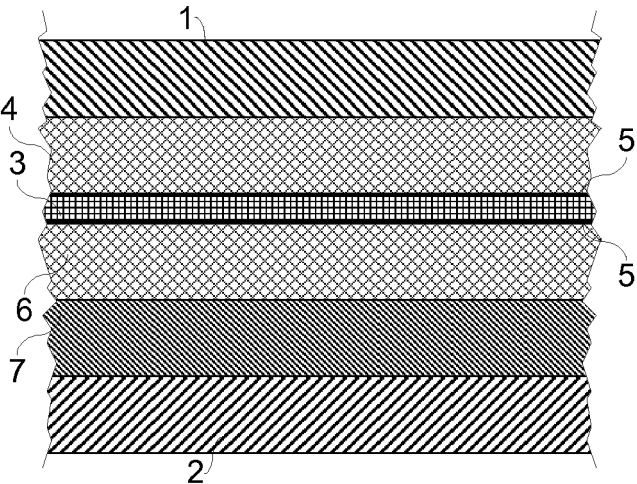


Fig.7



EUROPEAN SEARCH REPORT

Application Number
EP 09 16 7355

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			B41M B41N B41F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 September 2009	Examiner Giannitsopoulos, G
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
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EP 09 16 7355

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21-09-2009

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