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(54) **A compressible layered element for realising a varnishing blanket applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper**

(57) The compressible layered element (1) for realising a varnishing blanket applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper comprises a first compressible layer (2) and a second compressible layer (3) exhibiting a labile adhesion at the interface (4, 5), the first compressible layer (2) exhibiting a second face (6) opposite the interface (4, 5) and exhibiting first adhesive means (11) for adhesion to a layered transfer element (7) of the overprint onto the paper, the second compressible layer (3) exhibiting a second face (8) opposite the interface (4, 5) and exhibiting second adhesive means (12) for adhesion to a layered support element (9), the adhesion to the interface (4, 5) between the first and second compressible layer (2, 3) being weaker than both the adhesion capability of the first compressible layer (2) to the layered transfer element (7) guaranteed by the first adhesive means (11) and the adhesion capability of the second compressible layer (3) to the layered support element (9) guaranteed by the second adhesive means (12).

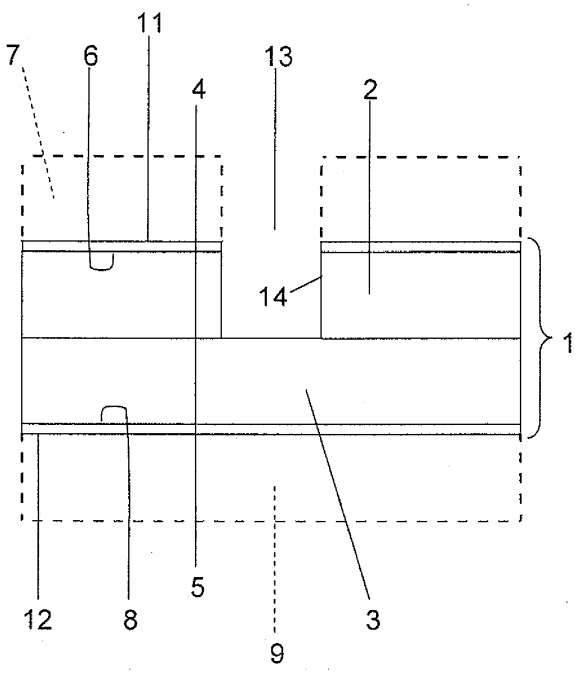

Fig. 1

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Description

[0001] The present invention relates to a compressible element for realising a varnishing blanket applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper.

[0002] In the sector of offset printing, in order to give protection or a particular surface finish (shiny or matt) to the printed materials, generally transparent varnishes are used, known as "overprinting" varnishes. The varnishes used are typically water-based or UV reticulated.

[0003] For transfer of overprint varnish onto the paper, in many applications a rubber textile known in the sector as a "blanket" is used.

[0004] Usually these varnishes are applied by dedicating, for the purpose, one or more special printing units positioned as final elements of the machine; these "varnishing groups" are further followed by ovens or lamps, necessary for the final reticulation of the varnishes.

[0005] It often happens that during the course of this operation, a part of the printed material has to be kept free of the application of the overprint varnish.

[0006] For this purpose, at these zones the blankets have to be incised, with the upper layer removed: the reducing of the thickness does not enable the transfer of the varnish onto the support to be treated.

[0007] The incised areas of the blanket are known as "knock-outs".

[0008] The blankets used in this type of application not only guarantee good release of the varnish, but must also guarantee ease of incising and removal of the surface layer.

[0009] Further, in order for the blankets to be usable repeatedly, it is advantageous to guarantee a dimensional stability which enables them to be demounted and remounted from the cylinder many times without this causing a loss of precision of the incised areas.

[0010] The structure of many of the blankets at present on the market in general comprises a support layer, a single-layer compressible element destined to be incised for creation of knock-outs, and a transfer layer of the overprint onto the paper.

[0011] In these known solutions the incision can exhibit a non-uniform depth which weakens the structure of the blanket when the knock-out increases in depth up to also incising the support layer which has to guarantee the desired dimensional stability. The incision, when the blanket is wound with a certain tension about the blanket-bearing cylinder, can constitute a start-point for the breaking of the blanket.

[0012] The technical task of the present invention is, therefore, to realise a compressible element for realising a varnishing blanket that is applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper from a blanket, which enables obtaining of knock-outs on the blanket, obviating the technical drawbacks noted in the prior art.

[0013] In the ambit of this technical task, an aim of the invention is to realise a compressible element for realising a varnishing blanket applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper from a blanket, which enables high dimensional stability, greater ease and precision of incision for obtaining knock-outs, and a high mechanical resistance even after the creation of the knock-outs.

[0014] The technical task, as well as this and other aims, are attained in the present invention by a compressible layered element for realising a varnishing blanket applicable to a cylinder of an offset machine for transfer of an overprint onto the paper according to claim 1.

[0015] Further characteristics and advantages of the invention will more fully emerge from a description of a preferred but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawing, in which:

the figure shows the structure of the compressible layered element which is used to form the varnishing blanket, the remaining layered elements of which are illustrated in a broken line.

[0016] With reference to figure 1, a compressible layered element 1 is illustrated for realisation of a blanket that is applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper.

[0017] The blanket further comprises, beyond the compressible layered element 1, a layered transfer element 7 of the overprint onto the paper, and a layered support element 9 destined for contact with the cylinder of the printing machine.

[0018] The compressible layered element 1 comprises a first compressible layer 2 and a second compressible layer 3, exhibiting a labile adhesion at an interface 4, 5 thereof.

[0019] The first compressible layer 2 exhibits a second face 6 exhibiting first adhesive means 11 for adhesion to the layered transfer element 7 of the overprint onto the paper.

[0020] The second compressible layer 3 exhibits a second face 8 exhibiting second adhesive means 12 for adhesion to the layered support element 9.

[0021] The adhesion to the interface 4, 5 between the first compressible layer 2 and the second compressible layer 3 is advantageously weaker than the adhesion capacity of the first compressible layer 2 to the layered transfer element 7 guaranteed by the first adhesive means 11 and to the adhesion capacity of the second compressible layer 3 to the layered support element 9 guaranteed by the second adhesive means 12.

[0022] In the blanket there are knock-outs 13, made by incision.

[0023] The knock-outs 13 exhibit a uniform depth, extending up to the interface 4, 5 between the first compressible layer 2 and the second compressible layer 3.

[0024] The labile adhesion to the interface 4, 5 between the first compressible layer 2 and the second com-

pressible layer 3 always enables, during removal of incised areas in the blanket for the creation of the knock-outs 13, the detachment of the incision zone of the first compressible layer 2 from the second compressible layer 3, with respect to both the detachment of the transfer layer 7 from the first compressible layer 2 and to the detachment of the second compressible layer 3 from the support layer 9.

[0025] The realisation of the incisions 14 for the creation of the knock-outs 13 internally of only the first compressible layer 2 protects from loss of adhesion at the interface between the second compressible layer 3 and the layered support element 9 due to the infiltrations of the cleaning products into the knock-outs 14 and this contributes to further increasing the duration of the blanket.

[0026] The first compressible layer 2 and the second compressible layer 3 can be made of an elastomer material, and in particular in this case preferably though not necessarily the elastomer material comprises a mixture of nitrile rubbers. Other known elastomers, monomers and reactive oligomers, thermoplastic elastomers, or a mixture thereof are equally usable for realising the first compressible layer 2 and the second compressible layer 3.

[0027] Alternatively the first compressible layer 2 and the second compressible layer 3 can be made of polymer material.

[0028] The first compressible layer 2 and the second compressible layer 3 preferably exhibit the same base material to which are added, such as to confer the desired compressibility, foamed or foaming agents (foamed or non-foamed microspheres of different sizes and rigidity, or blowing agents) chemically identical but in different concentrations or chemically different.

[0029] Alternatively or in combination with the above, once more for conferring the desired compressibility, the first compressible layer 2 and the second compressible layer 3 can be added-to with soluble salts obtained by leaching.

[0030] Preferably, though not necessarily, the second compressible layer 3 exhibits a smaller thickness to that of the first compressible layer 2, inasmuch as its function is prevalently that of protecting the layered element 9 during the creation of the knock-outs 13, as well as that of improving the overall compressibility of the element 1.

[0031] The first compressible layer 2 and the second compressible layer 3 are joined to the interface 4, 5 preferably directly without interposing adhesive substances, by exploiting exclusively the chemical-physical compatibility thereof.

[0032] In particular the join between the first compressible layer 2 and the second compressible layer 3 is realised by spreading or calendering or extrusion of one on the other.

[0033] Note that the multi-layer structure of the compressible layered element 1 prevents any small imprecision in the depth of the incisions 14 from reaching up to the layered support element 9 which has to guarantee the dimensional stability of the blanket and compromising the functionality thereof.

[0034] As the integrity of the layered support element 9 is thus guaranteed, the support 9 can be subjected to rectification for ad hoc adjustment of the thickness thereof without compromising the mechanical and structural characteristics necessary for carrying out the function thereof.

[0035] The compressible layered element of the invention enables realising a varnishing blanket that is suitable for creating the knock-outs without risk of a structural weakening of the layered support element which for this reason too can be subjected to a reduction of thickness in order to adapt in a more versatile way to the time-by-time specifications required by the constructors of off-set printing machines, thus enabling elimination of the traditional under-textiles today used for this purpose.

[0036] The compressible layered element for realising a varnishing blanket applicable to a cylinder of an offset printing machine for transfer of an overprint onto the paper, as conceived herein, is susceptible to numerous modifications and variants, all falling within the ambit of the claimed concept; furthermore, all the details are replaceable by technically-equivalent elements.

Claims

1. A compressible layered element (1) for realising a varnishing blanket applicable to a cylinder of an off-set printing machine for transfer of an overprint onto the paper, **characterised in that** it comprises a first compressible layer (2) and a second compressible layer (3) exhibiting a flexible adhesion at the interface (4, 5), said first compressible layer (2) exhibiting a second face (6) opposite the interface (4, 5) and exhibiting first adhesive means (11) for adhesion to a layered transfer element (7) of said overprint onto the paper, said second compressible layer (3) exhibiting a second face (8) opposite the interface (4, 5) and exhibiting second adhesive means (12) for adhesion to a layered support element (9), said adhesion to the interface (4, 5) between said first and second compressible layer (2, 3) being weaker than both the adhesion capability of said first compressible layer (2) to said layered transfer element (7) guaranteed by said first adhesive means (11) and the adhesion capability of said second compressible layer (3) to said layered support element (9) guaranteed by said second adhesive means (12).

2. The compressible layered element (1) for realising a varnishing blanket according to claim 1, **characterised in that** said first and second compressible layer (2, 3) are made of an elastomer material.

3. The compressible layered element (1) for realising

a varnishing blanket according to the preceding claim, **characterised in that** said elastomer material comprises a mixture of nitrile rubbers.

4. The compressible layered element (1) for realising a varnishing blanket according to claim 1, **characterised in that** said first and second compressible layer (2, 3) are made of a polymer material.

5. The compressible layered element (1) for realising a varnishing blanket according to any one of the preceding claims, **characterised in that** said first and second compressible layer (2, 3) exhibit the same base material, to which have been added foamed or foaming agents that are chemically identical but are in different concentrations or are chemically different.

6. The compressible layered element (1) for realising a varnishing blanket according to any one of the preceding claims, **characterised in that** said second compressible layer (3) exhibits a smaller thickness than said first compressible layer (2).

7. The compressible layered element (1) for realising a varnishing blanket according to any one of the preceding claims, **characterised in that** said first and second compressible layer (2, 3) are joined at the interface (4, 5) directly without interposing of adhesive substances, solely by exploiting the chemical-physical compatibility thereof.

8. The compressible layered element (1) for realising a varnishing blanket according to the preceding claim, **characterised in that** the join between said first and second compressible layer (2, 3) is realised by means of spreading or calendering or extrusion of one on the other.

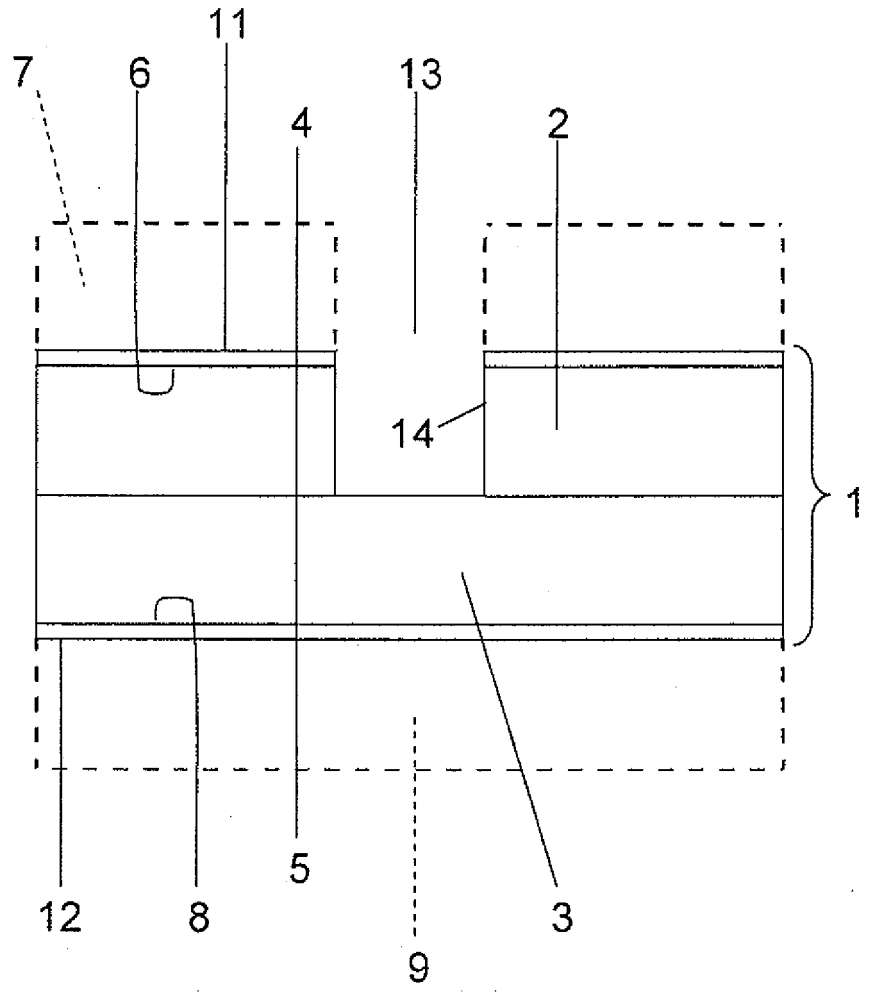

Fig. 1