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(54) Article with reversible fastening surface

(57) Multilayer article with reversible fastening surface, comprising a layer made up of a plurality of loops (1) emerging from a support base (2) on which the loops are anchored, and also comprising an adhesive layer (3) in correspondence of the surface of said base (2) opposite to the one from which the loops (1) project, characterized in that it exibits, in facing relationship with said adhesive layer (3), a layer of polypropylene (4) or the like, with a release or equivalent layer (5) interposed therebetween.

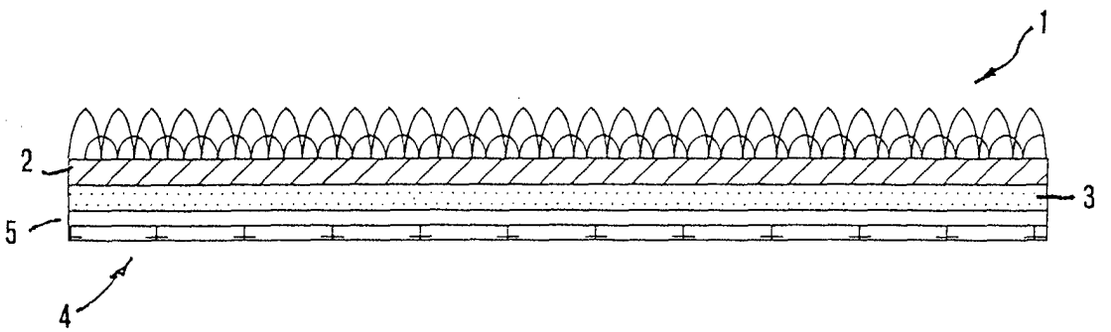

Fig. 3

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Description

[0001] The present invention relates to an article with reversible fastening surface.

[0002] More in particular, the article in question is of multilayer structure type, with a so-called "velcro" layer, that is, a layer composed of a thin textile structure having a plurality of stitches or loops emerging from, and anchored to, a base for the support thereof.

[0003] Patent EP 693889 discloses an article with a reversible fastening surface of a type above mentioned. This known article is made adhesive on the layer opposite to that of the loops, so that when forming either a roll with a single continuous sheet, or a stack with a plurality of individual sheets, from the same article, the surface of each of the layers of the roll or stack, results in direct contact with the loops of the underlying layers. Shown in Fig. 1 is a schematic cross-section view of such an article: "A" indicates the loops, "B" indicates the loops-supporting base and "C" indicates the adhesive applied onto the base "B" from the side opposite to the loops "A". Shown in Fig. 2 is a schematic cross-section view of said article when this is rolled up.

[0004] One of the major drawbacks to be found when using this known material, which is able anyway to maintain stable the shape of a roll or stack, lies in the strong difficulty of unwinding a roll or detaching single sheet from a stack, owing to the strength exerted by the adhesive of each layer onto the loops of the underlying layer, which strength allows the roll to maintain a perfect cylindrical shape or the stack to form a perfect parallelepiped. This implies a costant and accurate calibration of the means operating the unwinding of the roll or the removal of single sheet from the stack, which, in many circumstances, proves to be incompatible with the current production requirements. Moreover, the surface of the rolls for handling and unwinding the roll is to be suitable treated to avoid possible glueing effects.

The main object of the present invention is to overcome the said drawbacks.

[0005] This result has been achieved, according to the invention, by adopting the idea of making an article having the features indicated in the characterizing part of claim 1. Further characteristics being set forth in the dependent claims.

[0006] The advantages deriving from the present invention lie essentially in the fact that it is possible to provide a correct and easy unwinding of the roll, or the detachment of single sheets, while ensuring anyway the capacity of maintaining the cylindrical or paralleliped shape of the assembly both during the transportation and the operating steps thereof; that an article according to the present invention is relatively easy to make and cost-effective.

[0007] These and other advantages and characteristics of the invention will be best understood by anyone skilled in the art from a reading of the following description in conjunction with the attached drawings given as a practical exemplification of the invention, but not to be considered in a limitative sense, wherein:

- Fig. 1 is a cross-section view of a conventional article;
- Fig. 2 is a cross-section view of a roll obtained with the article shown in Fig. 1;
- Fig. 3 is a cross-section view of an article according to the invention;
- Fig. 4 is a cross-section view of a roll obtained with an article according to the invention;
- Fig. 5 is a schematic diagram relating to a possible production process of the article according to the invention;
- Fig. 6 is a schematic diagram relating to the step of removing the polypropolylene layer.

[0008] Reduced to its basic structure, and reference being made to Figs. 3-6 of the attached drawings, an article with reversible fastening surface according to the invention is of multilayer type, with one layer consisting of a textile structure with loops (1) projecting from a polyethylene base or the like (2) for the support thereof, an adhesive layer (3) applied on the surface of said base (2) opposite to the loops (1) and a layer of polypropylene or the like (4) separated from the adhesive by a "release" layer (5). The release layer may be, for example, of a type commercially available with the name "PP25 ICHEMCO". The release layer has the function of allowing the polypropylene (4) or the like to be easily detached from the adhesive (3) .

[0009] In practice, the adhesive (3) does not act on the loops (1) as it is isolated therefrom by the polypropylene (4) which, in turn, becomes anchored, from the side without release layer, firmly but weakly to the loops (1). Thus, when the article is rolled up, it can be easily unreeled, but the roll maintains its cylindrical shape both during said unreeling and during the transportation and handling of the same roll.

Likewise, if the article is in the form of stacked sheets, each sheet can be easily removed from the stack which, however, maintains its parallepiped shape all the time.

[0010] With reference to the diagram of Fig. 5, a possible way of producing an article according to the invention comprises unwinding the textile structure provided with loops, from a corresponding roll (this structure being available on the market) and carrying out the so-called rolling, that is, the coupling of the loop fabric with the base made of polyethylene or the like (2). Afterwards, provision is made for spreading the adhesive on the base (2) of the structure at a station "SA" downstream of the one which accomodates the roll. At the same time, the polypropylene (4) is unwound from a roll located at a corresponding station "SP" and, downstream thereof, a release layer (5) is applied on the side of it which is to come in contact with the adhesive (3) at a corresponding operating station "SR". The two tapes (1, 2, 3) and (4, 5) thus obtained are then coupled by

means of a calender performing pressure-operated coupling at a station "SC" located downstream of the other stations, so that the resulting article is then rolled up to form a roll "RM".

[0011] The schematic diagram of Fig. 6 shows a step of detaching the polypropylene layer (4) along with the release layer (5) from the structure (1, 2) having the adhesive (3) thereon, said step being possibly carried out with the aid of suitable unwinding rollers (of known type). While the assembly (1, 2, 3) is transfered to the site of use (where it will be cut to size and applied on clothes, diapers or other objects, according to known techniques known to those skilled in the art), the polypropylene layer (4) with the release layer can be rolled up to be recoverd as recyclable waste material. The function of the release layer may be also performed by silicone-based products.

Claims

1. Multilayer article with reversible fastening surface, comprising a layer made up of a plurality of loops (1) emerging from a support base (2) on which the loops are anchored, and also comprising an adhesive layer (3) in correspondence of the surface of said base (2) opposite to the one from which the loops (1) project, **characterized in that** it exhibits, in facing relationship with said adhesive layer (3), a layer of polypropylene (4) or the like, with a release or equivalent layer (5) interposed therebetween.

2. Article according to claim 1 **characterized in that** it is made up of a single, rolled-up sheet.

3. Article according to claim 1 **characterized in that** it is made up of more sheets which overlap on each other to make a stack.

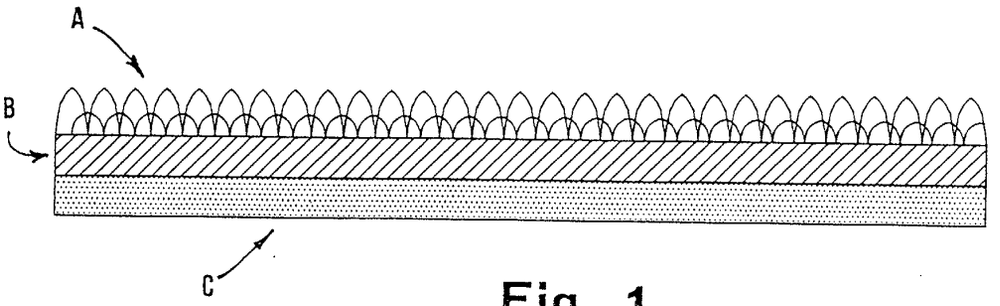

Fig. 1

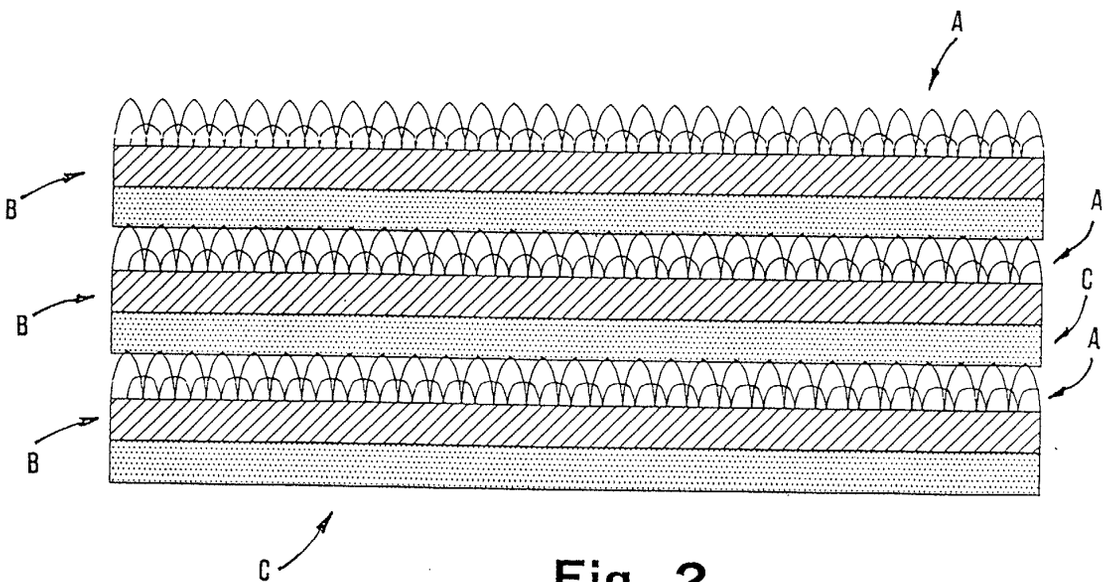

Fig. 2

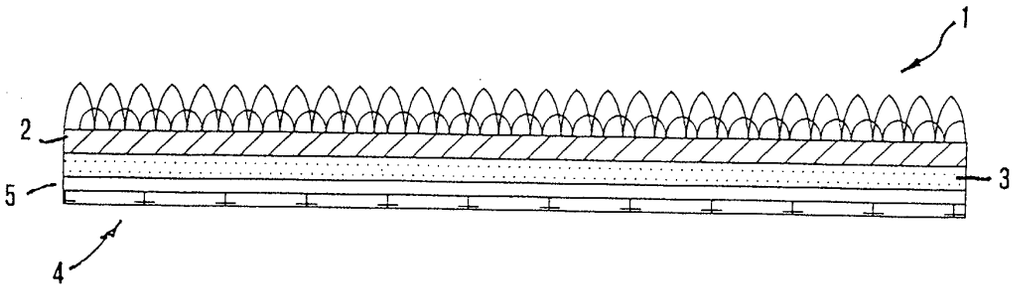

Fig. 3

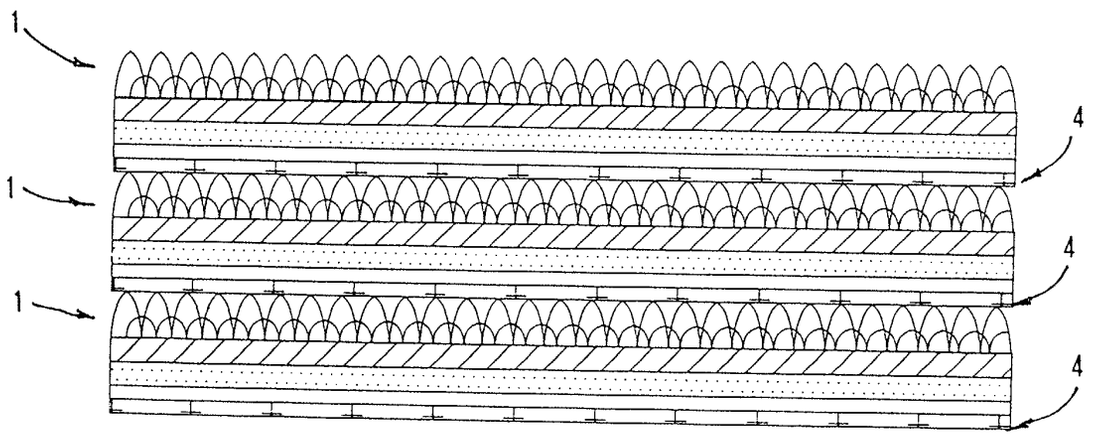

Fig. 4

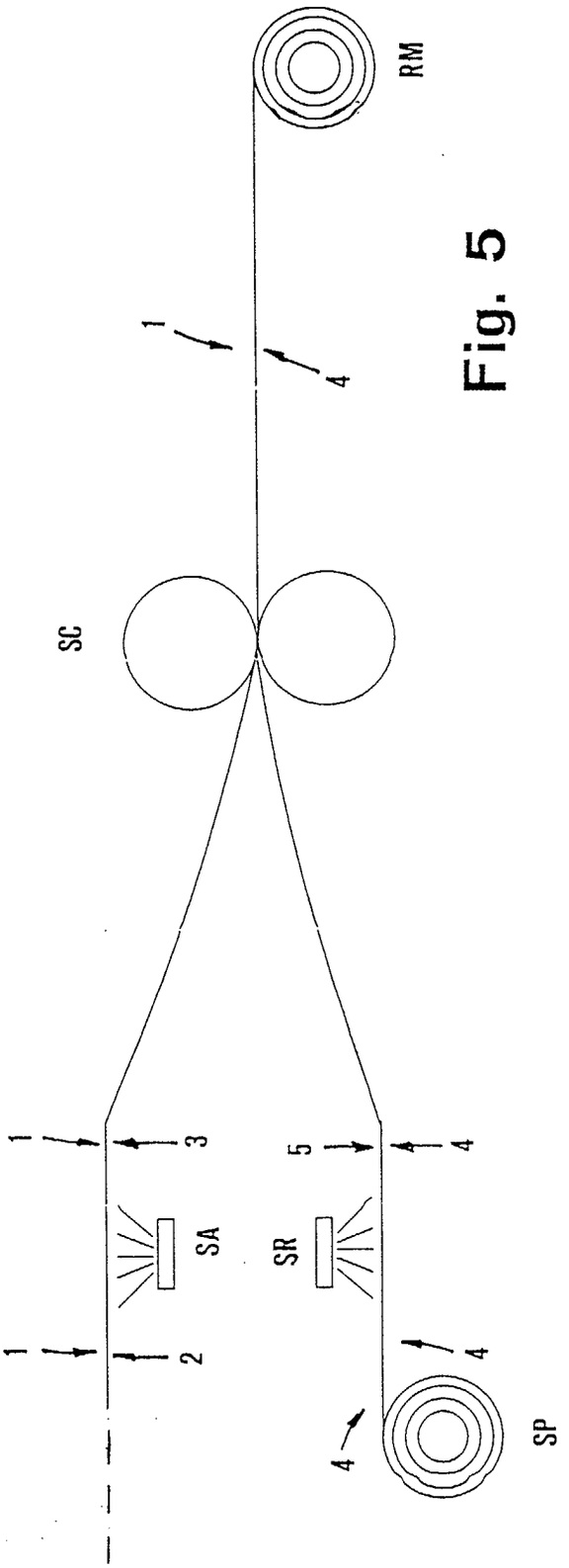

Fig. 5

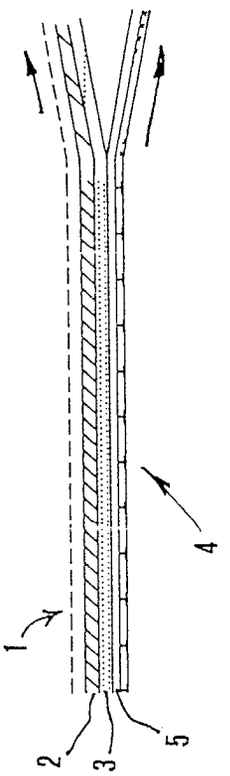

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 02 42 5784

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 95 03723 A (MINNESOTA MINING & MFG) 9 February 1995 (1995-02-09) * page 3, line 31 - page 4, line 1 * * page 5, line 32 - page 6, line 7 * * page 7, line 6 - line 10 * * page 13, line 1 - line 7 * * page 14, line 12 - line 30 * * page 15, line 27 - line 38; claim 1; figures 3,8 *	1-3	A44B18/00
A	US 3 341 004 A (CEDRIC HOEGLUND KARL) 12 September 1967 (1967-09-12) * column 2, line 58 - column 3, line 16 * * column 4, line 20 - line 36; claim 1; figure 1 *	1,2	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A44B
A61F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	5 June 2003	Horubala, T

CATEGORY OF CITED DOCUMENTS

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05-06-2003

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