



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.10.2010 Bulletin 2010/41

(51) Int Cl.:
B24D 3/00 (2006.01)

(21) Application number: **10159186.5**

(22) Date of filing: **07.04.2010**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA ME RS

(71) Applicant: **Huisman, Hendrikus Gerardus Maria**
7531 CH Enschede (NL)

(72) Inventor: **Huisman, Hendrikus Gerardus Maria**
7531 CH Enschede (NL)

(74) Representative: **'t Jong, Bastiaan Jacob et al**
Inaday B.V.
Hengelosestraat 141
7521 AA Enschede (NL)

(30) Priority: **07.04.2009 NL 2002726**

(54) **Sandpaper**

(57) The invention relates to sandpaper comprising a flexible layer and an abrasive material attached to one side of the flexible layer, wherein an adhesive layer is

arranged to the other side of the flexible layer, opposite of the abrasive material.

Preferably the adhesive layer of the sandpaper has a pressure sensitive adhesive.

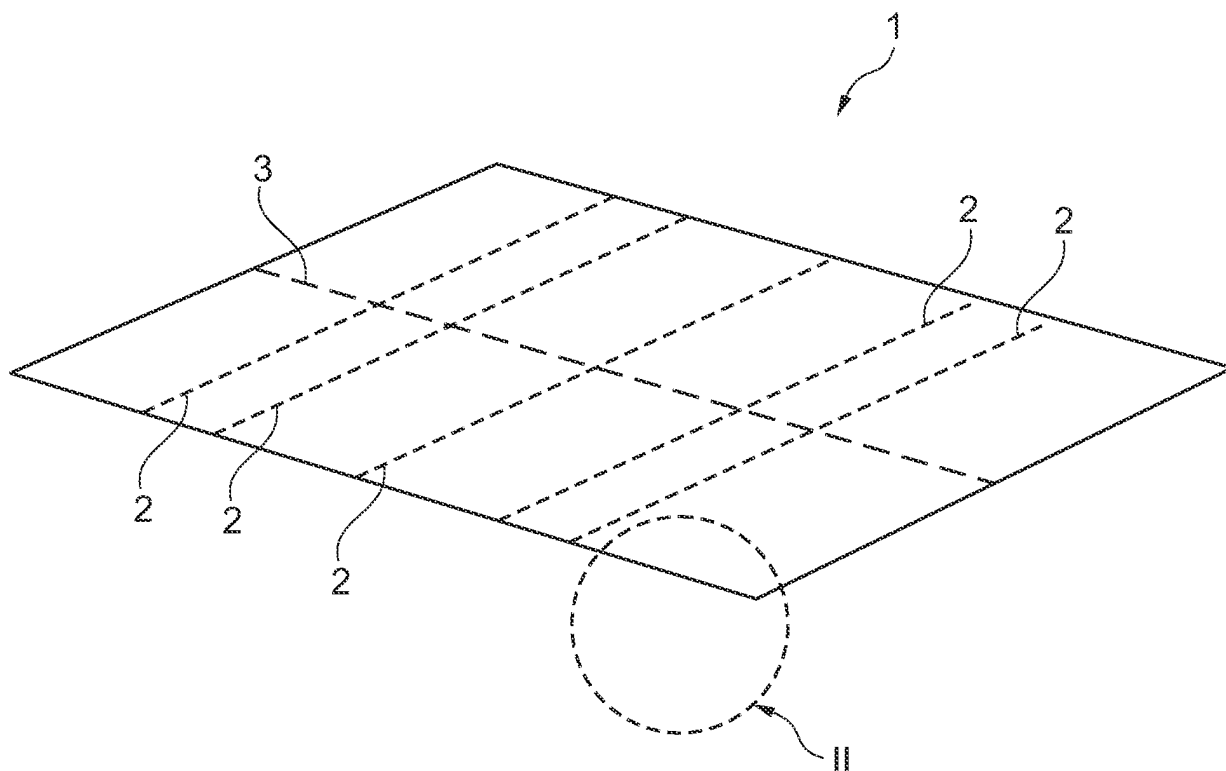


Fig. 1

Description

[0001] The invention relates to sandpaper comprising a flexible layer and an abrasive material attached to one side of the flexible layer.

[0002] Sandpaper is known in a plurality of varieties. Three common groups of sandpaper are sheet like sandpaper for sanding by hand, shaped sanding paper for sanding machines and endless belt sanding paper for belt sanding machines. The shaped sanding paper is commonly provided with a cloth like backing to cooperate with a velcro layer on the sanding machine. This provides a reliable attachment of the sandpaper to the sanding machine and is easily removable. The cost for such a hooks-and-loops enabled sandpaper are relatively high.

[0003] Sheet like sandpaper is used for sanding by hand, but is also often used on sanding machines with clamps for clamping the sandpaper. The sheet like sandpaper generally has to be tailored to a suitable size. Sandpaper can be cut by scissors, but the abrasive material is bad for the cutting edges of the scissors. Tearing of sandpaper is also difficult and often results in uneven edges.

[0004] Sheet like sandpaper known in the prior art has a smooth back surface. As a result the sandpaper slides easily in the hand or along a sanding block around which the sandpaper is wrapped. As a result of the sliding of the sandpaper, the force applied to the sandpaper is not effectively transferred to the abrasive material and to the surface to be sanded.

[0005] It is an object of the invention to provide sandpaper, which at least partially alleviates the above mentioned disadvantages.

[0006] This object of the invention is achieved with sandpaper according to the preamble, which is characterized in that an adhesive layer is arranged to the other side of the flexible layer, opposite of the abrasive material.

[0007] The adhesive layer makes it possible to attach the sandpaper to for example a sanding block. The sandpaper is fixed to the sanding block by the adhesive layer and cannot slide or shift. As a result the force applied to the sanding block is effectively transferred to the sandpaper and to the object to be sanded.

[0008] When a piece of sandpaper is folded double the adhesive layer is brought in contact with itself, such that a double sided sandpaper is provided and no risk of sliding or wrapping of the sandpaper occurs.

[0009] The sandpaper according to the invention can also be used effectively on a sanding machine. The adhesive layer provides a good connection of the sandpaper to the sanding machine, which even could make clamps on the sanding machine superfluous.

[0010] In a preferred embodiment of the sandpaper according to the invention the adhesive layer comprises a pressure sensitive adhesive. A pressure sensitive adhesive does not need an activation to be applied to a surface. When using sandpaper it is easy when the ad-

hesive layer can be used directly, without having to apply an activation agent, such as water, a second component or heat.

[0011] In another embodiment of the sandpaper according to the invention the pressure sensitive adhesive has a low tack. A pressure sensitive adhesive with lock tack can be removed easily from a surface after use, similar to post-it notes, which adhere to a surface when used and can be removed, without any residue on the surface, after use.

[0012] The pressure sensitive adhesive preferably comprises an elastomer based on one of the group: natural rubber, nitriles, butyl rubber, acrylics, styrene block copolymers and ethylene-vinyl acetate.

[0013] The pressure sensitive adhesive could comprises a tackifier, such as rosin ester, to adjust the tackiness of the adhesive layer and make it suitable for its purpose.

[0014] In yet another preferred embodiment of the sandpaper according to the invention a perforation is arranged in the flexible layer. The perforation provides a tearing zone along which the sandpaper can be torn easily without resulting in uneven, undesired edges of the torn parts of sandpaper.

[0015] Preferably the perforation is line-shaped to provide a tear line for tearing the flexible layer in to two pieces. Generally the sandpaper is cut up and used in rectangular pieces.

[0016] In still another preferred embodiment of the sandpaper according to the invention a number of parallel and orthogonal line-shaped perforations are provided. These number of parallel and orthogonal line-shaped perforations makes it possible to tear out of a sheet of sandpaper a piece of desired dimensions. For example a number of line-shaped perforations are provided to enable the tailoring of the sheet of sandpaper for use on a sanding machine, for use on a sanding block or for use as double sided sandpaper for sanding by hand.

[0017] Preferably the flexible layer of the sandpaper according to the invention comprises one of the group: paper, cloth (cotton, polyester, rayon) and PET film.

[0018] In another embodiment of the sandpaper according to the invention the abrasive material comprises abrading particles and a bond for bonding the abrading particles to the flexible layer.

[0019] The abrading particles could for example comprise one of the group: flint, garnet, emery, aluminum oxide, silicon carbide, alumina-zirconia, chromium oxide and ceramic aluminum oxide.

[0020] Still another embodiment of the sandpaper according to the invention, comprises a second piece of sandpaper having at least a flexible layer and an abrasive material attached to one side of the flexible layer, wherein the second piece of sandpaper is attached to the adhesive layer of the sandpaper, in order to provide double sided sandpaper. These and other features of the invention will be elucidated in conjunction with the accompanying drawings.

Figure 1 shows a perspective view of an embodiment of sandpaper according to the invention.

Figure 2 shows a cross-sectional view of the sandpaper according to figure 1.

Figure 3 shows schematically a first application of the sandpaper according to the invention.

Figure 4 shows schematically a second application of the sandpaper according to the invention.

Figure 5 shows schematically a third application of the sandpaper according to the invention.

[0021] Figure 1 shows a perspective view of an embodiment of sandpaper 1 according to the invention. This sandpaper 1 is a rectangular sheet, which is provided with parallel line-shaped perforations 2 and orthogonal line-shaped perforations 3. Along these line-shaped perforations, the sandpaper 1 can be torn in to suitable pieces.

[0022] Figure 2 shows a cross sectional view of the sandpaper 1. The sandpaper 1 has a flexible sheet 4, which is typically paper or a cloth. On a first side of the flexible sheet 4, abrasive particles 5. These abrasive particles 5 are bound to the flexible sheet 4 by an adhesive 6 present between the particles 5.

[0023] On the opposite side of the flexible sheet 4, an adhesive layer 7 is arranged. The adhesive is preferably a pressure sensitive adhesive, such that the sandpaper 1 can directly be applied to a surface, without any activation of the adhesive layer 7.

[0024] Figure 3 shows a first application of the sandpaper 1 according to the invention. A suitable piece is torn from the sheet 1 shown in figure 1 and then folded double. The piece 1 is folded such that the adhesive layer 7 gets in contact with itself and that the abrasive particles 5,6 provide both outer surfaces of the folded piece.

[0025] Figure 4 shows a sanding block 8. A suitable piece 1 of the sandpaper of the invention is provided and folded around the sides of the sanding block 8. The adhesive layer 7 is brought in contact with the surface of the sanding block 8, such that the sandpaper 1 is fixed thereto. As a result the sanding block 8 is provided with a reliable sanding surface. When using an low tack adhesive for the adhesive layer 7, the sandpaper 1 can be removed easily from the sanding block 8 when worn and changed for a new piece.

[0026] Figure 5 shows a third application of the sandpaper 1 according to the invention. The sandpaper 1 is applied with the adhesive layer 7 to the sole 9 of a sanding machine 10. As a result the sole 9 of the sanding machine 10 is provided with an abrasive layer 5,6, which can be removed easily after use.

to the other side of the flexible layer, opposite of the abrasive material.

2. Sandpaper according to claim 1, wherein the adhesive layer comprises a pressure sensitive adhesive.
3. Sandpaper according to claim 2, wherein the pressure sensitive adhesive has a low tack.
4. Sandpaper according to claim 2 or 3, wherein the pressure sensitive adhesive comprises an elastomer based on one of the group: natural rubber, nitriles, butyl rubber, acrylics, styrene block copolymers and ethylene-vinyl acetate.
5. Sandpaper according to any of the claims 2 - 4, wherein the pressure sensitive adhesive comprises a tackifier, such as rosin ester.
6. Sandpaper according to any of the preceding claims, wherein a perforation is arranged in the flexible layer.
7. Sandpaper according to claim 6, wherein the perforation is line-shaped to provide a tear line for tearing the flexible layer in to two pieces.
8. Sandpaper according to claim 7, wherein a number of parallel and orthogonal line-shaped perforations are provided.
9. Sandpaper according to any of the preceding claims, wherein the flexible layer comprises one of the group: paper, cloth (cotton, polyester, rayon) and PET film.
10. Sandpaper according to any of the preceding claims, wherein the abrasive material comprises abrading particles and a bond for bonding the abrading particles to the flexible layer.
11. Sandpaper according to claim 10, wherein the abrading particles comprise one of the group: flint, garnet, emery, aluminum oxide, silicon carbide, alumina-zirconia, chromium oxide and ceramic aluminum oxide.
12. Sandpaper according to any of the preceding claims, comprising a second piece of sandpaper having at least a flexible layer and an abrasive material attached to one side of the flexible layer, wherein the second piece of sandpaper is attached to the adhesive layer of the sandpaper, in order to provide double sided sandpaper.

Claims

1. Sandpaper comprising a flexible layer and an abrasive material attached to one side of the flexible layer, characterized in that an adhesive layer is arranged

55

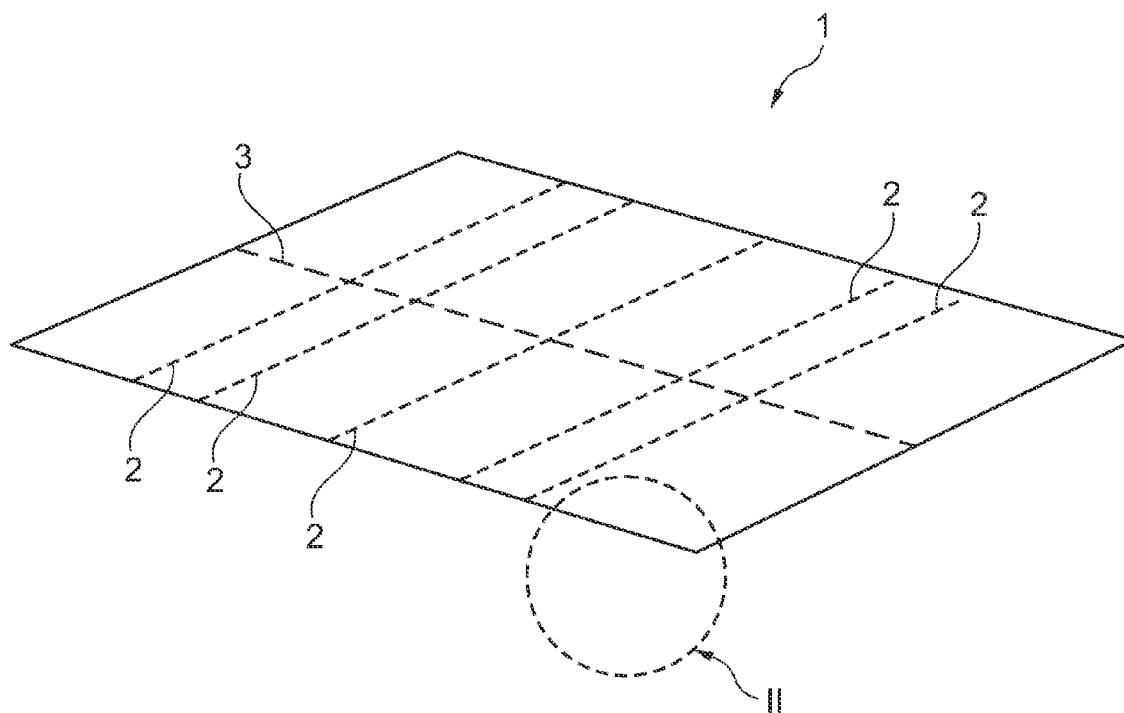


Fig. 1

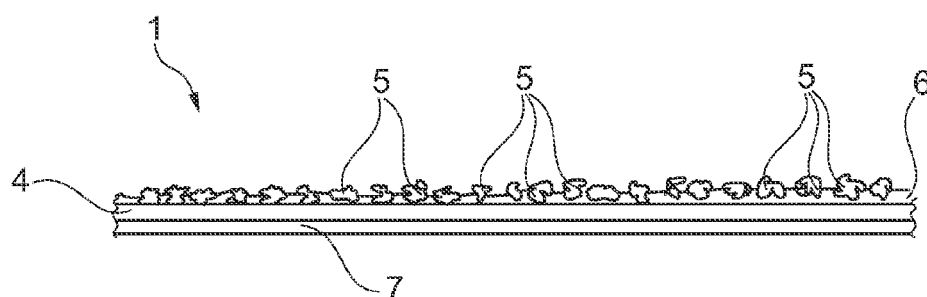


Fig. 2

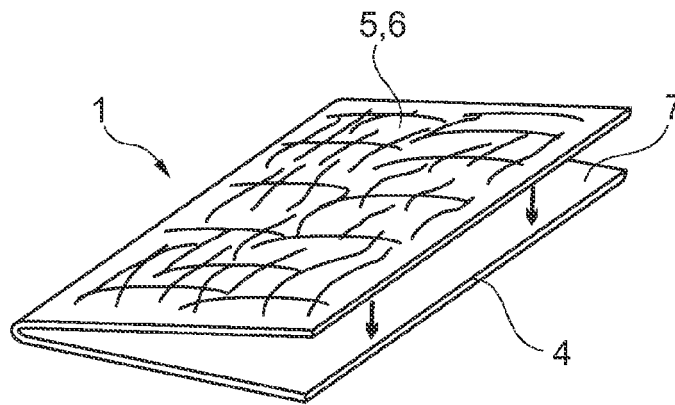


Fig. 3

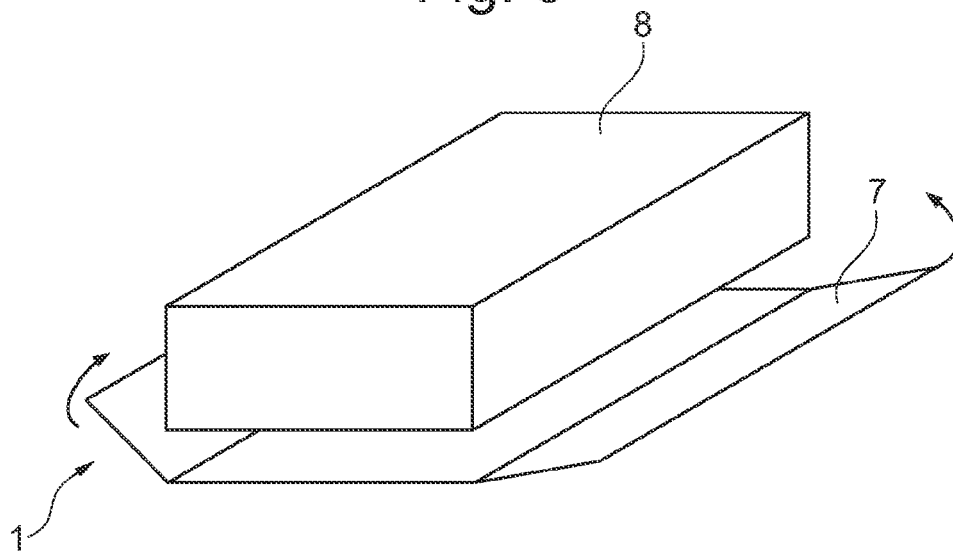


Fig. 4

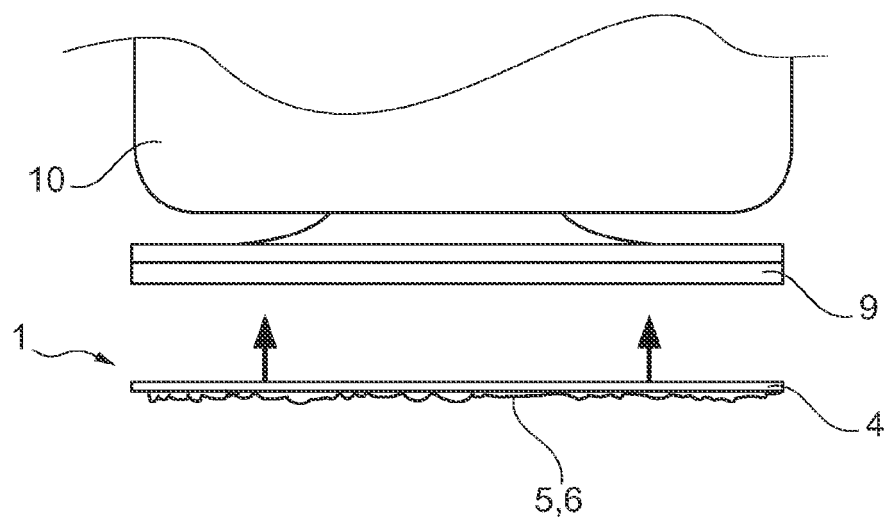


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 10 15 9186

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2004/020133 A1 (PAXTON RICHARD T [US] ET AL) 5 February 2004 (2004-02-05)	1-5,10,11	INV. B24D3/00
Y	* paragraphs [0003], [0004], [0062], [0065], [0081], [0082] *	6-9,12	
Y	DE 20 2007 010346 U1 (SIA ABRASIVES IND AG [CH]) 27 September 2007 (2007-09-27) * the whole document *	6-9	
Y	US 5 658 184 A (HOOPMAN TIMOTHY L [US] ET AL) 19 August 1997 (1997-08-19) * column 4, lines 46-67 * * column 23, lines 20-37 *	12	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			B24D
Place of search		Date of completion of the search	Examiner
Munich		23 July 2010	Zeckau, Jochen
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			

1
EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 15 9186

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-07-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004020133 A1	05-02-2004	AT 376478 T	15-11-2007
		AU 2003240787 A1	23-02-2004
		BR 0312984 A	14-06-2005
		CN 1671511 A	21-09-2005
		DE 60317068 T2	24-07-2008
		EP 1525074 A1	27-04-2005
		JP 2005534511 T	17-11-2005
		WO 2004012906 A1	12-02-2004

DE 202007010346 U1	27-09-2007	EP 2170558 A1	07-04-2010
		WO 2009013280 A1	29-01-2009

US 5658184 A	19-08-1997	NONE	
