

12 .

EUROPEAN PATENT APPLICATION

21 Application number: **88308543.3**

51 Int. Cl.⁵: **B41N 10/02**

22 Date of filing: **15.09.88**

The title of the invention has been amended
(Guidelines for Examination in the EPO, A-III,
7.3).

43 Date of publication of application:
21.03.90 Bulletin 90/12

84 Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL SE

71 Applicant: **SCAPA GROUP PLC**
Oakfield House 52 Preston New Road
Blackburn Lancashire BB2 6AH(GB)

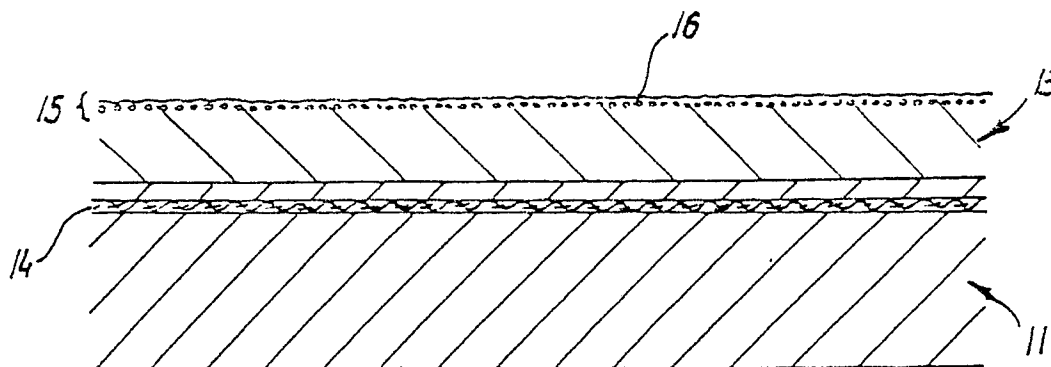
72 Inventor: **Brookfield, Frank**
154 Ings Lane
Rochdale Lancashire(GB)

74 Representative: **Funge, Harry et al**
M'CAW & CO. 41-51 Royal Exchange Cross
Street
Manchester M2 7BD(GB)

54 **Printing blanket and method for the manufacture thereof.**

57 The invention is concerned with a printing blanket or the like comprising a textile base fabric (11) defined by a coherent woven or knitted core (14) having a batt of textile fibres needled thereto and a silicone or like coating (13) to such base fabric, the exposed face of the coating being of profiled form.

In producing the coating, multiple layers of a silicone rubber or equivalent material are applied to the base fabric. In order to provide the profiled surface to the end product, at least the final layer (15) of coating material includes a multiplicity of silicate bodies (16) such as glass beads.



EP 0 358 824 A1

INDUSTRIAL FABRICS

The invention concerns industrial fabrics, and has more particular reference to blankets for use in printing, laminating, fusing and other industrial processes.

It is known in the transfer printing and analogous arts to use printing blankets comprising heat resistant textile fibres needled to a coherent carrier layer as a means of support of the work being processed in movement of the same into intimate pressure contact with a heated cylinder.

In the case of transfer printing, the textile printing blankets become impregnated with dyestuffs in time, and such dyestuffs become carbonised with passage of time and give rise to brittleness in the blanket.

Furthermore, transfer printing blankets are prone to take up oil from knitted fabrics, with adverse effect on the performance of the blanket.

In the case of laminating, where similar considerations apply, the needled printing blanket is susceptible to contamination by excess adhesive, which adhesive cannot easily be removed, and the useful life of the blanket is accordingly reduced.

It has been proposed to provide a silicone coating at the working surface of the blanket, but, whilst the presence of such a coating does facilitate the removal of contaminants, the nature of the exposed face of the coating does of itself introduce problems. For example, in those processes where the smooth surface of the polymer receives a paper, metallized sheet, film or foil into intimate surface contact therewith, the exclusion of air makes difficult the subsequent separation of the laminating layer from the blanket.

More importantly, the intimate contact between the laminating material and the surface of the blanket precludes the possibility of even a slight relative movement between such material and the blanket surface, for example as the blanket moves round a roller or cylinder, with the result that, in practice, the laminating material will be susceptible to creasing.

If used in the context of transfer printing, the resistance to relative movement arising from the intimate contact between the paper carrier and the silicone surface of the blanket can be manifested as a misalignment of the pattern relative to any pattern present on the sheet being processed or to paper tearing.

The object of the present invention is to avoid the problems inherent in conventional silicone coated printing and like blankets.

According to one aspect of the present invention there is proposed a printing blanket or the like comprising a textile base structure and a silicone

or like coating at one surface at least of said base structure characterised in that the exposed surface of said coating is of profiled form.

According to a preferred feature, the coating includes silicate bodies therein adjacent the said exposed surface and contributing to the profiled form thereof.

According to another aspect, the invention proposes the method of forming a printers blanket or the like comprising the application of successive coating layers of a silicone coating material to a textile base fabric comprising heat resistant fibres, characterised in that at least the final coating layer includes silicate bodies therein.

According to a further preferred feature, the method includes the further steps of effecting a partial cure of each successive coating layer and subjecting the exposed surface of that surface layer to a grinding operation to remove fibres protruding therefrom.

The invention will now be described further, by way of example only, by reference to the accompanying diagrammatic drawing illustrating one embodiment thereof in diagrammatic cross-section.

Referring to the drawing, a blanket for use in transfer printing, laminating or the like comprises a textile base fabric 11 to the working face of which is applied a coating 13 of silicone rubber.

The base fabric 11 includes a coherent core 14 of woven, needled or other suitable form and a fibrous batt needled to the said core. Typically the core is a woven structure having a weight of, for example 400 grams per square metre and comprises polyarimid yarns such as those sold under the Trade Mark KEVLAR, whilst the fibrous batt comprises polyarimid fibres, for example as sold under the Trade Mark NOMEX, in an amount sufficient to give a base fabric having an overall weight of approximately 1300 grams per square metre and a thickness of approximately 5 millimetres.

However, other materials may be used, for example polyester/polyarimid fibres; base fabrics having a weight per unit area of between 150 and 4000 grams per square metre, and a corresponding thickness, are thought to be of relevance to the invention.

The coating of silicone rubber material present at the working face of the blanket comprises multiple layers of such material, the outermost layer 15 including glass beads 16 embedded therein for a purpose hereinafter to be made apparent.

Each successive layer of silicone rubber is allowed to become partially cured to an extent sufficient to allow mechanical working of the exposed surface thereof, whereupon the surface is

ground to remove protruding fibres. The application of further layers of silicone rubber is continued until substantially no fibres protrude through the exposed surface of the coating. At this stage a final layer is applied, said final layer, being outermost layer 15 aforesaid, including a multiplicity of glass beads, and the whole of the coating is then cured.

Typically the glass beads used will be of a diameter of between 20 and 250 microns, and the ratio (by weight) of the glass beads and silicone rubber making up the final layer is within the range 0.5:1 to 3.0:1.

The silicone rubber coating, which coating conveniently comprises a single component or a two-component liquid system elastomer, will be, say, 1 millimetre thick, whilst the weight of such coating, excluding that the final coating layer and the glass beads contained therein, will approximate to 1300 grams per square metre. The glass/silicone layer will amount to, say, 100 to 300 grams per square metre.

The partial curing of the successive silicone rubber layers may involve the application of heat at a level of, say, from 120° to 130° C followed by an eventual full cure at a temperature of between 150° C and 160° C. The silicone rubber coating will ordinarily include red oxide to increase the temperature resistance thereof, although it is to be understood that the silicone rubber may, if desired, be of the cold cure type.

Alternatives to the silicone rubber coating will, of course, present themselves to one skilled in the art, and in this regard mention is made of the vinylidene fluoride co-polymer sold under the Trade Mark VITON.

Whilst we prefer to use glass beads of hollow configuration and within the range of diameters specified, solid beads of like size may be used if desired. Indeed, the invention is not limited to the use of silicates of dimensions falling within the range specified, and silicates of diameters falling outside these ranges may be found useful in some circumstances.

By providing glass beads in the final layer, the layer serves to provide a profiled, exposed surface to the coating, such profiled surface precluding that intimate surface contact between a paper or laminating foil and the blanket which gives rise to separation and like problems, and, furthermore, having the effect of allowing slight relative movement between the blanket and paper carrier thereon necessary to accommodate passage of the blanket and supported carrier around rollers or cylinders, and thus avoid pattern misalignments.

1. A printing blanket or the like comprising a textile base structure and a silicone or like coating at one surface at least of said base structure characterised in that the exposed surface of said coating is of profiled form.

2. A printing blanket or the like as claimed in claim 1, wherein the coating includes silicate bodies therein adjacent the said exposed surface and contributing to the profiled form thereof.

3. A printing blanket or the like as claimed in claim 1, wherein the silicate bodies comprise glass beads.

4. A printing blanket or the like as claimed in claim 2 or 3, wherein the silicate bodies are spherical in form.

5. A printing blanket or the like as claimed in claim 4, wherein the diameter of the spherical bodies lies in the range 20 to 250 microns.

6. A printing blanket or the like as claimed in any one of the preceding claims, wherein the textile base structure comprises a coherent core of woven or knitted form and a batt needled thereto.

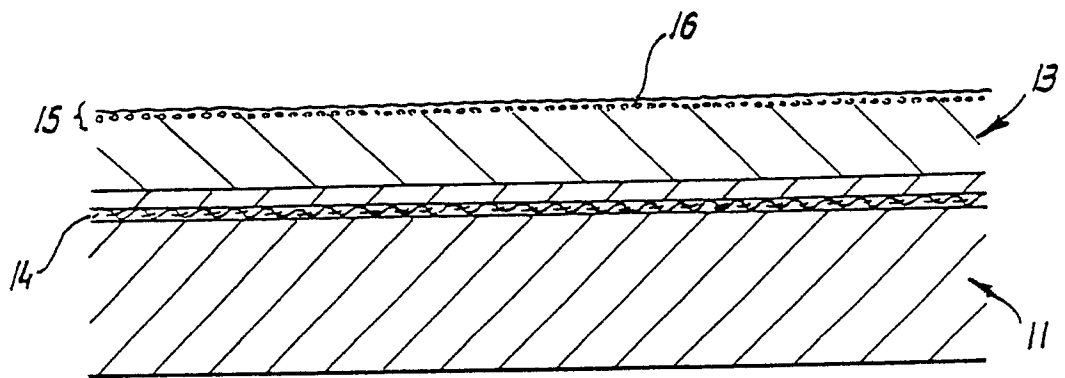
7. A printing blanket or the like as claimed in any of the preceding claims wherein the silicon or like coating comprises a silicone rubber.

8. The method of forming a printers blanket or the like comprising the application of successive coating layers of a silicone coating material to a textile base fabric comprising heat resistant fibres, characterised in that at least the final coating layer includes silicate bodies therein.

9. The method as claimed in claim 8, wherein each successive coating layer is partially cured and the exposed surface thereof is subjected to a grinding operation to remove fibres protruding therefrom.

10. The method as claimed in claim 8 or 9, wherein the ratio, by weight, of the silicate bodies and silicone coating material of the final layer is within the range 0.5:1 to 3.0:1.

Claims





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.5)
X	GB-A- 510 215 (THE VICTORIA RUBBER CO. LTD) * Claims 1,2 * ---	1	B 41 N 10/02
X	DE-A-1 951 462 (CONTINENTAL GUMMI-WERKE AG) * Page 3, lines 29-31; page 4, lines 1-6; claim 5 * ---	1	
X	PATENT ABSTRACTS OF JAPAN, vol. 8, no. 2 (M-266)[1439], 7th January 1984; & JP-A-58 167 197 (FUJIKURA GOMU KOGYO K.K.) 03-10-1983 * Abstract * ---	1	
Y	Idem ---	8	
Y	EP-A-0 224 365 (DAYCO CORP.) * Page 6, lines 15-21,28-35 * ---	1,8	
Y	FR-A- 955 065 (MINNESOTA MINING AND MFG. CO.) * Figure 1; page 13, lines 25-34,76-84 * ---	1-5	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
Y	DE-C- 951 370 (FABER & SCHLEICHER AG) * Claim * ---	1-5	B 41 N 10/00
Y	US-A-4 178 850 (R.W. HELMIG) * Column 4, lines 1-35 * ---	1-5	
A	DE-C- 831 845 (CONTINENTAL GUMMI-WERKE AG) * Claim; figure * ---	1-5	
A	US-A-4 048 368 (F.D. HALE et al.) * Claim 1 * ---	6	
		-/-	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28-04-1989	Examiner DUPART J-M.B.
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			



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.5)
A	DE-B-1 165 046 (CONTINENTAL GUMMI-WERKE AG) * Claims 1,6 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28-04-1989	Examiner DUPART J-M.B.
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	