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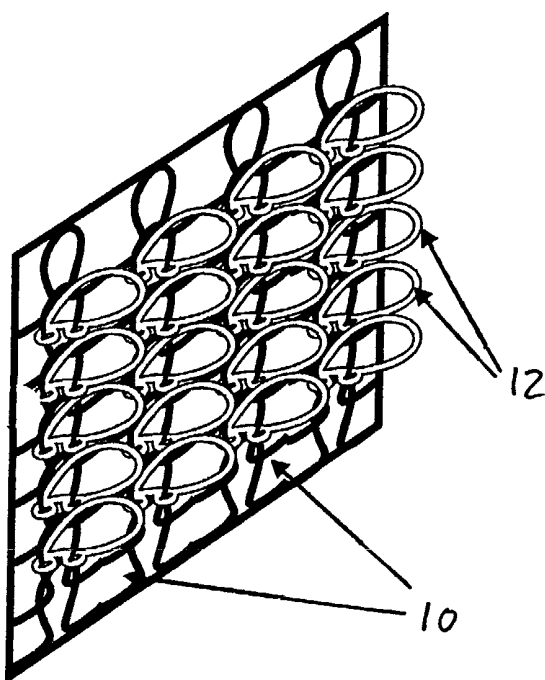
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(54) Title: CLEANING CLOTH



(57) Abstract: A cloth comprises a carrier web (10) carrying a multiplicity of loops (12) of yarn, the carrier web being formed at least in part from yarn which exhibits an anti-bacterial and/or anti-fungal property. The loops are preferably sub-divided into a multiplicity of filaments or microfibres.

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CLEANING CLOTH

The present invention relates to a cloth for cleaning purposes, whether in catering facilities, in the household or otherwise: the invention also relates to cleaning devices formed from or including such a cloth.

5 Dish cloths are commonly used for cleaning purposes, particularly in catering facilities and in the household. Such cloths are used and re-used repeatedly and pick up bacteria: dish cloths are accordingly responsible for spreading bacteria and for consequent food poisoning on many occasions.

10 We have now devised a cloth which has, associated with it, a reduced risk of spreading bacteria or fungi and which, in preferred embodiments, has highly effective cleaning capabilities.

In accordance with the present invention, there is  
15 provided a cloth which comprises a carrier web carrying a multiplicity of loops of yarn, or such loops which have been subsequently severed, the carrier web being formed at least in part from yarn which exhibits an anti-bacterial and/or anti-fungal property.

20 In practice, the loops are distributed over the surface of the cloth, projecting loosely therefrom. In use of this cloth, the yarn having the anti-bacterial and/or anti-fungal property inhibits the growth of bacteria and/or fungi on the cloth, so that the risk of bacteria and/or fungi being spread  
25 by the cloth is substantially reduced.

The carrier web may be formed at least in part from yarn which incorporates an agent or agents having an anti-bacterial and/or anti-fungal property. The yarn which incorporates the active agent preferably comprises a synthetic  
30 plastics material (particularly an acrylic) in which the active agent is dispersed, for example in particulate form.

Instead, the carrier web may be formed at least in part from yarn which includes silver: the yarn may include filaments or particles of silver, or may comprise one or more textile

fibres which have a layer or coating of silver bonded thereto. It is known that silver has effective anti-bacterial and anti-fungal properties.

Preferably the yarn in the loops is split or subdivided into a multiplicity of filaments or fibres: typically of the order of 1000 such microfibrils may be formed. Cleaning cloths have been made hitherto, having a multiplicity of loops (or terry cloth loops) thus subdivided to provide the cloth with a very soft characteristic, which enables the fibres to enter very small crevices and so gives the cloth exceptionally efficient cleaning capabilities. Further, the microfibre construction of the terry loop yarn endows the cloth with a greatly enhanced absorbency characteristic.

The yarn from which the loops are formed may be of a known form, comprising a multiplicity of filaments of high-melt polymer material co-extruded with low-melt polymer material disposed between those filaments. The cloth may be subjected, after its formation, to a known process in which it is subjected to heat and immersed in alkali, to dissolve out the low-melt material and so subdivide the yarn into a multiplicity of filaments. The yarn may instead be subjected to this subdivision process before, rather than after, it is used in the formation of the cloth. The loops may be severed or trimmed after the cloth is formed, to provide a velour finish.

Preferably the carrier web of the cloth is of knitted construction. Preferably the multiplicity of loops also form part of the knitted construction.

The cloth in accordance with the present invention may be used as a dish cloth or other cleaning cloth. It may however be used as part of a wide variety of cleaning devices: for example it may be used to form the head (or cover the head) of a cleaning mop or other cleaning device.

An embodiment of the present invention will now be described by way of example only and with reference to the accompanying drawings, in which:

FIGURE 1 is an enlarged schematic view of a cloth in accordance with the present invention; and

FIGURE 2 is an enlarged sectional view of a portion of the cloth of Figure 1.

5 Referring to the drawings, there is shown a cloth in accordance with the invention, which comprises a web 10 onto which a multiplicity of loops 12 are formed, distributed over the surface of the cloth and projecting loosely therefrom, on both sides thereof.

10 The web 10 is itself of knitted construction and the multiplicity of loops 12 also form part of the knitted construction. The yarn from which the loops 12 are formed comprises synthetic plastics material (for example a 70% polyester/30% polyamide material). The yarn in the loops 12  
15 is split or subdivided into a multiplicity of fine fibres, typically of the order of 1000 such fibres.

In accordance with the invention, at least some of the yarns, from which the carrier web 10 is knitted, exhibit an anti-bacterial and/or anti-fungal property. For example, the  
20 carrier web may be formed at least in part from yarn which incorporates an agent or agents having an anti-bacterial and/or anti-fungal property. The yarn may comprise an acrylic material in which the anti-bacterial/anti-fungal agent is dispersed, for example in particulate form. One suitable yarn  
25 is marketed in the UK by Acordis UK Limited under the trade name BIOKRYL, see also UK Patent No. 2,309,461.

Instead, the carrier web may be formed at least in part from yarn which includes pure silver: the yarn may include filaments or particles of silver, or may comprise one or more  
30 textile fibres which have a layer or coating of silver bonded thereto (such fibres are available from Noble Fiber Technologies of Scranton, Pennsylvania, USA under the trade name X-Static).

The yarn in the loops 12 may be split or subdivided,  
35 into its multiplicity of fine fibres, in a known process

subsequent to formation of the cloth: in this case, the cloth is subjected to heat and immersed in alkali, to dissolve out low-melt polymer material disposed between high-melt filaments of the yarn. Alternatively, the yarn may be split, using the  
5 same process, prior to formation of the cloth.

It will be appreciated that the micro-fibre construction of the terry loops 12 of the cloth give the cloth a very soft characteristic and endows the cloth with exceptionally effective cleaning capabilities and with greatly  
10 enhanced absorbency. Further, the active agent incorporated into the yarn of the carrier web 10 inhibits the growth of bacteria and/or fungi, so that the risk of bacteria and/or fungi being spread by the cloth is substantially reduced.

CLAIMS

- 1) A cloth which comprises a carrier web carrying a multiplicity of loops of yarn, the carrier web being formed at least in part from yarn which exhibits an anti-bacterial and/or anti-fungal property.  
5
- 2) A cloth as claimed in claim 1, in which said yarn of said carrier web incorporates an agent or agents having an anti-bacterial and/or anti-fungal property.
- 3) A cloth as claimed in claim 2, in which said yarn which incorporates said agent or agents comprises a synthetic plastics material in which said agent or agents are dispersed.  
10
- 4) A cloth as claimed in claim 1, in which said yarn of said carrier web includes silver.
- 15 5) A cloth as claimed in claim 4, in which said yarn of said carrier web comprises a textile fibre having a coating of silver.
- 6) A cloth as claimed in any preceding claim, in which said yarn which forms said loops comprises a synthetic plastics material subdivided into a multiplicity of filaments.  
20
- 7) A cloth as claimed in any preceding claim, in which said carrier web is of knitted construction.
- 8) A cloth as claimed in claim 7, in which said loops form

part of said knitted construction.

- 9) A dish cloth or other cleaning cloth, comprising a cloth as claimed in any preceding claim.
- 10) A cleaning mop or other cleaning device, having a head  
5 formed or covered by a cloth as claimed in any one of claims 1 to 8.

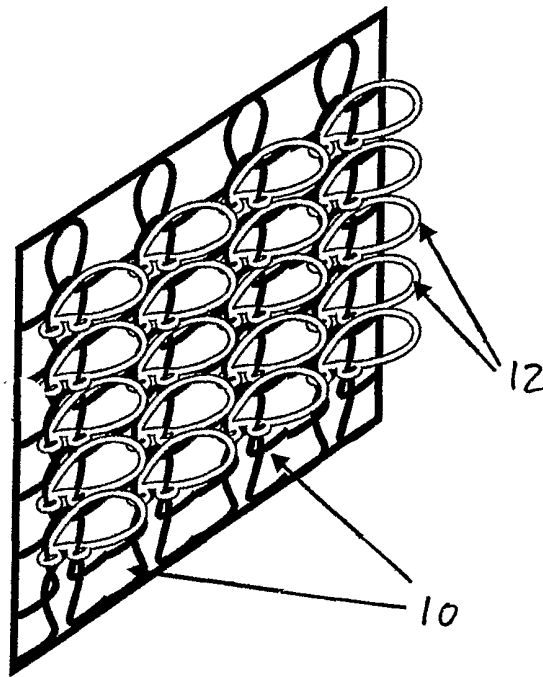


Figure 1

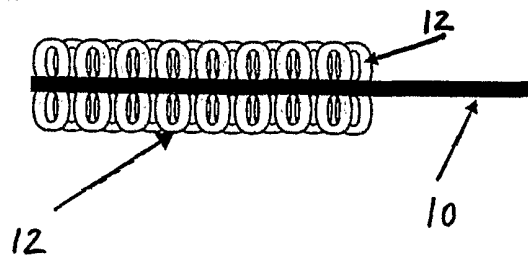


Figure 2

# INTERNATIONAL SEARCH REPORT

<b>Inte</b>	<b>Application No</b>
	PCT/GB 02/01045

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>				
IPC 7 A47L13/16				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols)				
IPC 7 A47L C11D				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)				
EPO-Internal, WPI Data, PAJ				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	WO 00 58092 A (SWEPORTS LTD.(US/US)) 5 October 2000 (2000-10-05) page 6, line 8 -page 12, line 14; claims 1-5,11-13,19-21; figures 1,2	1,6,8,9		
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A	---	9		
A	GB 464 108 A (GENERAL MOTORS CORP.) 12 April 1937 (1937-04-12) page 1, line 12 - line 68; claim 1	5		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <span style="margin-left: 200px;"><input checked="" type="checkbox"/> Patent family members are listed in annex.</span>				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">               *A* document defining the general state of the art which is not considered to be of particular relevance                *E* earlier document but published on or after the international filing date                *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)                *O* document referring to an oral disclosure, use, exhibition or other means                *P* document published prior to the international filing date but later than the priority date claimed             </td> <td style="width: 50%; border: none;">               *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.                *Z* document member of the same patent family             </td> </tr> </table>			*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *Z* document member of the same patent family
*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *Z* document member of the same patent family			
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International Application No  
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 10, 31 August 1998 (1998-08-31) & JP 10 140471 A (UNITIKA LTD), 26 May 1998 (1998-05-26) abstract ---	1
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 18, 5 June 2001 (2001-06-05) & JP 07 316923 A (NOH HOE-RYUN), 5 December 1995 (1995-12-05) abstract -----	

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Information on patent family members

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