



- (51) **International Patent Classification:**
A47L 13/255 (2006.01) A47L 13/16 (2006.01)
- (21) **International Application Number:**
PCT/EP2015/073579
- (22) **International Filing Date:**
12 October 2015 (12.10.2015)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
201420824801.5 23 December 2014 (23.12.2014) CN
- (71) **Applicant:** CARL FREUDENBERG KG [DE/DE]; Höhen-
erweg 2-4, 69469 Weinheim (DE).
- (72) **Inventors:** MA, Xinhua; Donghudajun SIP, Suzhou, Ji-
angsu 215000 (CN). GUO, Daoqin; No. 8 Jingkang Road,
Wuzhong District, Suzhou, Jiangsu 215000 (CN).
- (81) **Designated States** (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,
MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,
SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,
TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,
TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))

(54) **Title:** MOP HEAD WITH A MOP PLATE AND CLEANING PARTS CONSISTING OF YARNS

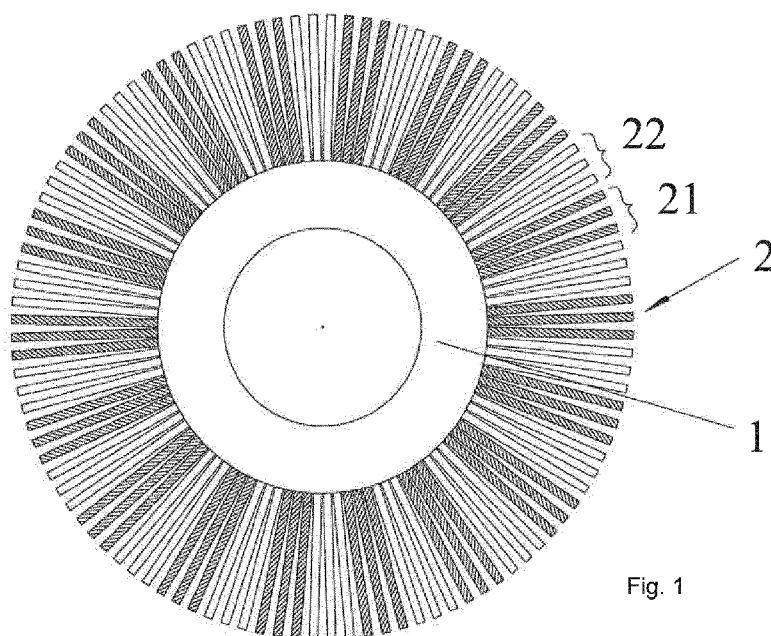


Fig. 1

(57) **Abstract:** Disclosed in the present patent application is a novel mop head, comprising a mop plate (1) and cleaning components (2) disposed on the circumference of the mop plate (1); the cleaning components (2) comprise first cleaning parts (21) and second cleaning parts (22), the first and second cleaning parts (21, 22) consisting of yarns, and the second cleaning parts (22) being of higher hardness than the first cleaning parts (21). The novel mop head provided by the present patent application has a simple structure, can remove stubborn stains, and has good particle adsorbing capability.



MOP HEAD WITH A MOP PLATE AND CLEANING PARTS CONSISTING
OF YARNS

5

Description

10

Technical field

The present patent application relates to the technical field of cleaning equipment, in particular to a novel mop head.

15

Background art

The yarn of existing rotary mops consists mainly of ultra-fine fibres of uniform specification. The composition of the ultra-fine fibres used is mainly 100% polyester, or polyester with a small amount of nylon (the nylon content generally
20 does not exceed 30%). A mop made from such yarn has high water absorbency, is easy to spin-dry, and can clean ordinary stains, but it is not capable of cleaning stubborn stains properly.

Content of the invention

25

The object of the present patent application is to provide a novel mop head which has a simple structure and can effectively remove stubborn stains, while also being able to adsorb dust particles.

Based on the above problem, the present patent application provides the following technical solution:

A novel mop head, comprising a mop plate and cleaning components disposed
5 on the circumference of the mop plate, the cleaning components comprising first cleaning parts and second cleaning parts, the first and second cleaning parts consisting of yarns, and the second cleaning parts being of higher hardness than the first cleaning parts.

10 Furthermore, the first cleaning parts comprise yarns made of polyester material.

Furthermore, the first cleaning parts comprise yarns made of a mixed polyester and nylon material, wherein the content of polyester is greater than that of nylon.

15

Furthermore, the second cleaning parts comprise yarns made of nylon material.

Furthermore, the second cleaning parts comprise yarns made of a mixed nylon and polyester material, wherein the content of nylon is greater than that of
20 polyester.

The present patent application also provides another technical solution:

A novel mop head, comprising a mop plate and cleaning components disposed
25 on the circumference of the mop plate, the cleaning components at least comprising one second cleaning part, the second cleaning part comprising yarns made of nylon.

Compared with the prior art, the present patent application has the following
30 advantages:

1. When a technical solution of the present patent application is adopted, first cleaning parts and second cleaning parts consisting of yarns are disposed at intervals on the circumference of the mop plate, the second cleaning parts
5 being of higher hardness than the first cleaning parts, so that the mop head can remove stubborn stains, and has high cleaning efficiency.

2. When a technical solution of the present patent application is adopted, the mop head at least comprises one second cleaning part made of nylon yarns,
10 which is able to remove stubborn stains and adsorb dust particles.

Description of the accompanying drawings

In order to explain more clearly the technical solution of embodiments of the
15 present patent application, accompanying drawings which need to be used in the description of embodiments are presented simply below. The accompanying drawings in the following description are merely embodiments of the present patent application; those skilled in the art could obtain other drawings on the basis of these drawings, without expending any inventive effort.

20

Fig. 1 is a schematic diagram of the structure of embodiment 1 of the novel mop head of the present patent application.

Particular embodiments

25

The above solution is explained further in conjunction with particular embodiments. It should be understood that these embodiments are intended to explain the present patent application, without being restricted to limiting the scope thereof. The implementation conditions adopted in the embodiments
30 may be further adjusted on the basis of the conditions of a particular

manufacturer; unspecified implementation conditions are generally the conditions used in conventional experiments.

Referring to Fig. 1, which is a schematic diagram of the structure of

5 embodiment 1 of the present patent application, a novel mop head is provided, comprising a mop plate 1 and cleaning components 2 disposed on the circumference of the mop plate 1, the cleaning components 2 comprising first cleaning parts 21 and second cleaning parts 22. In this example the first cleaning parts 21 and second cleaning parts 22 are arranged in sequence at
10 intervals, the first cleaning parts 21 and second cleaning parts 22 all being made of yarns, wherein the second cleaning parts 22 are of higher hardness than the first cleaning parts 21. The first cleaning parts 21 may employ conventional mop head yarns, e.g. yarns made of polyester material or a mixed polyester and nylon material (with a greater content of polyester than nylon),
15 while the yarns of the second cleaning parts 22 are made of a nylon material of higher hardness or a mixed nylon and polyester material (with a greater content of nylon than polyester). Of course, the second cleaning parts 22 may also employ yarns made of other materials of higher hardness; the present patent application imposes no limitations in this respect.

20

In another embodiment of the present patent application, the cleaning components at least comprise one second cleaning part comprising yarns made of nylon, e.g. the cleaning components are made completely of second cleaning parts.

25

Due to the high hardness, good toughness, high mechanical strength and wear resistance of the material of the second cleaning parts 22, the mop head of the present patent application can remove stubborn stains and adsorb dust particles, and has high cleaning efficiency.

30

The above embodiments merely explain the technical concept and characteristics of the present patent application, being intended to enable those skilled in the art to understand the content of the present patent application and the implement it on this basis, and cannot be used to restrict the scope of

5 protection of the present patent application. All equivalent changes or embellishments made on the basis of the spirit and substance of the present patent application should be included in the scope of protection thereof.

10

15

20

25

30

List of reference numbers:

1, mop plate;

5 2, cleaning components;

21, first cleaning parts;

22, second cleaning parts

10

15

20

25

30

Claims

1. Novel mop head, comprising a mop plate (1) and cleaning components (2)
5 disposed on the circumference of the mop plate (1), characterized in that the
cleaning components (2) comprise first cleaning parts (21) and second cleaning
parts (22) arranged in sequence at intervals, the first and second cleaning parts
(21, 22) consisting of yarns, and the second cleaning parts (22) being of higher
hardness than the first cleaning parts (21).
10
2. Novel mop head according to claim 1, characterized in that the first cleaning
parts (21) comprise yarns made of polyester material.
3. Novel mop head according to claim 1 or 2, characterized in that the first
15 cleaning parts (21) comprise yarns made of a mixed polyester and nylon
material, wherein the content of polyester is greater than that of nylon.
4. Novel mop head according to one of the preceding claims, characterized in
that the second cleaning parts (22) comprise yarns made of nylon material.
20
5. Novel mop head according to one of the preceding claims, characterized in
that the second cleaning parts (22) comprise yarns made of a mixed nylon and
polyester material, wherein the content of nylon is greater than that of polyester.
- 25 6. A novel mop head, comprising a mop plate (1) and cleaning components (2)
disposed on the circumference of the mop plate (1), characterized in that the
cleaning components (2) at least comprise one second cleaning part (22), the
second cleaning part (22) comprising yarns made of nylon.

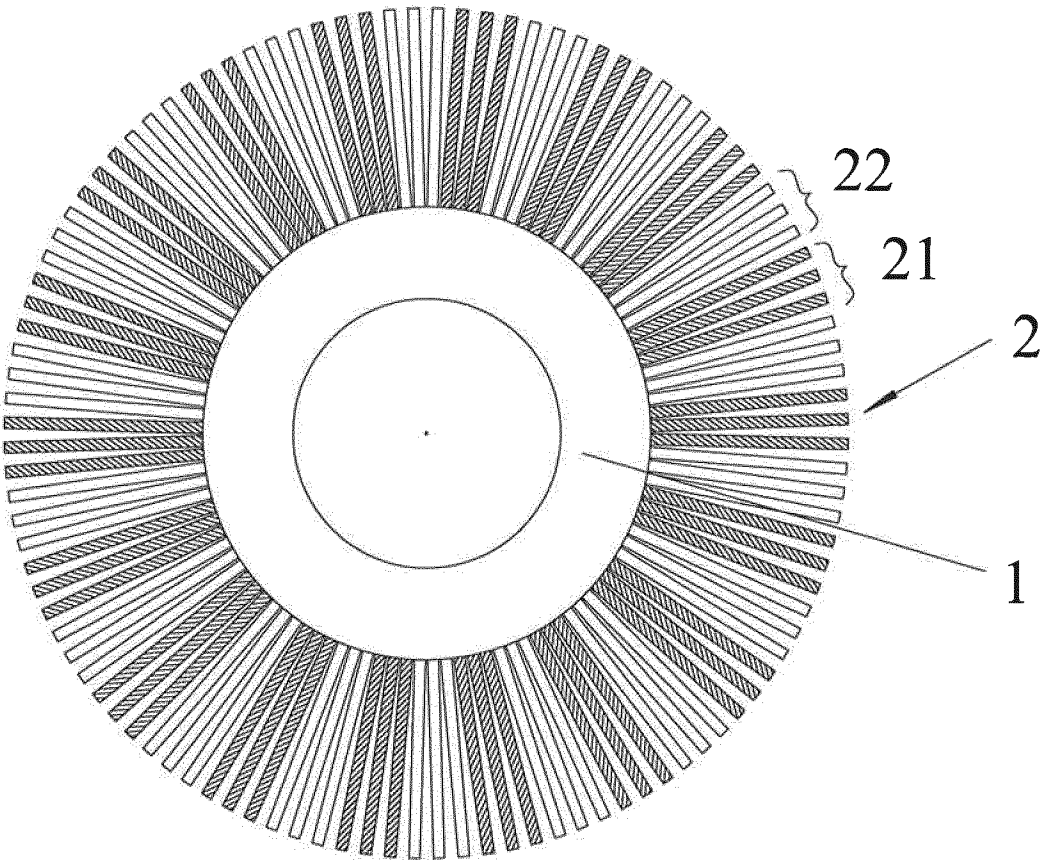


Fig. 1

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2015/073579

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47L13/255 A47L13/16
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47L D03D

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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 347 691 A1 (MARANGHI MARCO [IT]; PARENTI PAOLO [IT]) 27 July 2011 (2011-07-27) paragraph [0001] paragraph [0010] - paragraph [0012] paragraph [0014] - paragraph [0041]; figures 1-4	1-6
X	WO 2007/101518 A1 (FREUDENBERG CARL KG [DE]; TRAN PHU-DENNIS [DE]) 13 September 2007 (2007-09-13) page 10, line 26 - page 13, line 18; figures 1-4 ----- -/--	1-6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent 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

"&" document member of the same patent family

Date of the actual completion of the international search

12 May 2016

Date of mailing of the international search report

25/05/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Hubrich, Klaus

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/073579

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 887 712 A (VOSBIKIAN PETER S ET AL) 26 May 1959 (1959-05-26) column 1, line 60 - column 2, line 35; figures 1-6 column 2, line 51 - line 55 -----	1-5
A	US 2014/033460 A1 (SHIH CHIN-YANG [TW]) 6 February 2014 (2014-02-06) abstract; figures 1-7 -----	1-5
A	DE 200 03 875 U1 (FRIEB HANDELSGES M B H & CO KG [AT]) 21 June 2000 (2000-06-21) abstract; figure 1 -----	1-5
X	US 2014/246046 A1 (PULLEN KENT L [US] ET AL) 4 September 2014 (2014-09-04) paragraph [0019] - paragraph [0036]; figures 1-6 -----	6
X	DE 101 34 948 A1 (PFENNIG REINIGUNGSTECHNIK GMBH [DE]; HONG KYUNG JACK [KR]) 20 June 2002 (2002-06-20) the whole document -----	6
A	WO 2011/074751 A1 (LIVINGHUE CO LTD [KR]; LEE EUIJIN [KR]) 23 June 2011 (2011-06-23) abstract; figures 1-9 -----	1-6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/073579

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2347691	A1	27-07-2011	AU 2011200245 A1 04-08-2011
		EP 2347691 A1	27-07-2011
		IT 1397532 B1	16-01-2013
		US 2011173767 A1	21-07-2011
WO 2007101518	A1	13-09-2007	AU 2007222723 A1 13-09-2007
		CA 2644519 A1	13-09-2007
		CN 101400290 A	01-04-2009
		DE 102006011368 A1	20-09-2007
		EP 1991103 A1	19-11-2008
		WO 2007101518 A1	13-09-2007
US 2887712	A	26-05-1959	NONE
US 2014033460	A1	06-02-2014	NONE
DE 20003875	U1	21-06-2000	AT 3245 U1 27-12-1999
		DE 20003875 U1	21-06-2000
US 2014246046	A1	04-09-2014	NONE
DE 10134948	A1	20-06-2002	DE 10134948 A1 20-06-2002
		KR 200206343 Y1	01-12-2000
WO 2011074751	A1	23-06-2011	CN 102655799 A 05-09-2012
		KR 100955526 B1	30-04-2010
		WO 2011074751 A1	23-06-2011

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2015/073579

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5

Directed to a mop head with cleaning parts consisting of yarns of different hardness.

2. claim: 6

Directed to a mop head with cleaning part consisting of yarns made of nylon.
