(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 3 235 415 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.10.2017 Bulletin 2017/43

(51) Int Cl.:
A47L 13/254 *(2006.01)* ***A47L 13/258*** *(2006.01)*

(21) Application number: **17396002.2**

(22) Date of filing: **17.04.2017**

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(30) Priority: **16.04.2016 FI 20160100**

(71) Applicant: **Rekola, Petri**
00840 Helsinki (FI)

(72) Inventor: **Rekola, Petri**
00840 Helsinki (FI)

(74) Representative: **Pirhonen, Kari Lennart**
Patenttitoimisto Kari Pirhonen Oy
P.O. Box 71
20101 Turku (FI)

(54) FLAT MOP

(57) A flat mop (10), which comprises a mop frame (20), to which a mop (30) can be attached, and a pole (11) that has been attached to the mop frame with a swivelling joint (15, 24). The mop frame is formed by a skeleton that can be turned upside down in order to use both sides of the mop for cleaning. In the skeleton, there are ridges (23) that create a linear surface pressure on the surface to be cleaned, on top of which ridges there is soft and/or elastic material (22), such as soft plastic or rubber. At the edge of the skeleton of the mop frame there is a groove (21), into which the edge thickening (31) can be inserted to attach the mop to the mop frame.

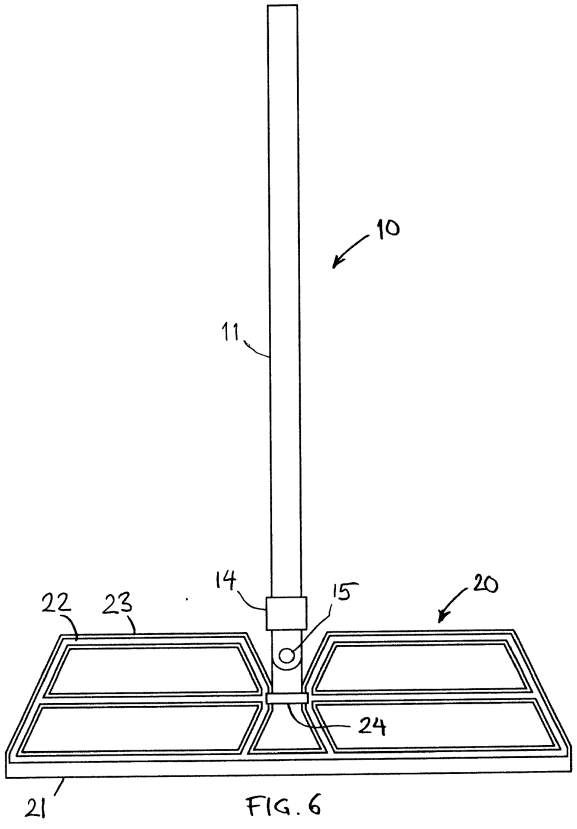

FIG. 6

EP 3 235 415 A1

Description

[0001] The object of the invention is a flat mop according to the preamble of claim 1, comprising a mop frame to which a mop can be attached, and a pole attached to the mop frame with a swivelling joint.

[0002] The mop of a flat mop is usually a cloth made of fabric, to which there may be attached yarn for making the mop thicker and Velcro bands or pockets for attaching the mop to the mop frame.

[0003] A flat mop's mop frame, to which the mop is attached, is usually longitudinal, plate-like. A cloth-like mop is usually attached to the mop frame with Velcro bands or with locking members located in a plate-like mop frame which compress the mop. A mop with two pockets is also commonly used. In this case, both ends of the longitudinal mop frame plate are inserted into the mop pockets such that the mop stays in place.

[0004] The Velcro bands and pockets of the mop are difficult to use and they can be damaged easily. An ordinary plate-like mop frame is also cumbersome to use, especially if on top of the plate there are locking members with the help of which the mop is attached to the mop frame. The locking members also make the mop frame uneven, causing the cleaning effect of the mop to remain weak. A flat mop often has weak cleaning performance also for the reason that it is impossible to create a sufficient surface pressure on the floor to be cleaned with a plate-like mop frame.

[0005] The purpose of this invention is to achieve a flat mop that does not contain the disadvantages presented above. Another purpose of the invention is to achieve a flat mop that is simple, easy to use and efficient. The flat mop according to the invention is characterised by what has been presented in the characterising part of claim 1.

[0006] According to the invention, the mop frame of the flat mop is formed by a longitudinal skeleton which has ridges that create a linear surface pressure on the floor to be cleaned. The ridges of the skeleton can also be coated with soft and/or elastic material, such as soft plastic or rubber. The elastic material at the tips of the ridges evens out, with the help of the ridges, the surface pressure exerted by the mop against the floor especially if the mop is a thin cloth formed from fabric, paper or other similar material. At the same time, the soft plastic or rubber at the tips of the ridges creates an efficient friction between the mop material and the mop frame, causing the mop to remain securely in place in conjunction with the mop frame during floor cleaning. Therefore it is possible to use thick mops as well as thin cloths, such as disposable cloths, in the flat mop according to the invention.

[0007] According to the invention, the mop is attached to a groove formed at the edge of the longer side of the mop frame. The groove of the mop frame forms a channel that is open at both ends or at least at one end, and at the outer edge of which groove there is a narrow gap. The mop to be attached to the groove has been formed such that the edge portion of the mop has a thin zone, the outer edge of which has an edge thickening. The edge thickening of the mop has been dimensioned to fit into the channel of the groove located at the edge of the mop frame. Similarly, the narrow gap located at the outer edge of the groove of the mop frame has been dimensioned such that the thin zone of the edge portion of the mop fits into the groove, but the edge thickening of the mop does not. Thereby the mop stays in the groove of the mop frame, because the edge thickening of the mop cannot exit the gap located at the edge of the groove. The mop to be used can be thick or thin, provided that the thin zone at the edge of the mop and the edge thickening fit into the groove of the mop frame.

[0008] The mop skeleton according to the invention is most advantageously two-sided such that the ridges of the skeleton are on both sides of the skeleton. Thereby the ridges on both sides of the skeleton are equipped with soft and/or elastic material, such as soft plastic or rubber.

[0009] When the mop frame skeleton is two-sided, there is attached to the skeleton a joint or hinge that allows the skeleton to be turned upside down. Thereby both sides of the cloth-like mop attached to the edge of the mop frame can be used efficiently for cleaning.

[0010] In the following, the invention is described by an example with reference to the accompanying drawings, in which

LIST OF FIGURES

[0011]

- Fig. 1 shows the structure of the flat mop according to the invention seen from the side of the mop frame.
- Fig. 2A shows the structure of the flat mop of Fig. 1 seen from the end of the mop frame.
- Fig. 2B shows the structure of the flat mop of Fig. 1 seen from the opposite end of the mop frame and with the mop in place.
- Fig. 3 is a top view of the mop frame of the flat mop according to the invention.
- Fig. 4A is a sectional view of Fig. 3 along the line 4A-4A.
- Fig. 4B is a sectional view of Fig. 3 along the line 4B-4B.
- Fig. 5 is a side and partly sectional view of the structure of the flat mop.
- Fig. 6 shows the structure of the flat mop of Fig. 1 where the mop frame is seen from the top.
- Fig. 7A is a partly sectional view of the flat mop according to the invention in a position where the first side of the mop is in use.
- Fig. 7B corresponds with Fig. 7A and is a partly sectional view of the flat mop in a position where the second side of the mop is in use.

DESCRIPTION OF THE FIGURES

[0012] Fig. 1 shows the structure of the flat mop 10 according to the invention seen from the side. The structure of the flat mop 10 includes a mop frame 20 which has been attached to a pole 11 through a swivel joint 15. The swivel joint 15 allows the pole 11 to be turned in relation to the mop frame 20 during the cleaning of a floor or other surface. Inside the mop frame 20 there is yet another swivel joint which allows the pole 11 to turn in the other direction. This joint has been presented in more detail in the following figures.

[0013] At the edge of the mop frame 20 of Fig. 1 there is a groove 21 to which the mop can be attached such that the thickening at the edge of the mop is inserted into the groove 21. Fig. 1 does not show the mop, which can be a thick yarn mop or a thin cloth. The edge fabric of the mop must have an edge thickening that fits into the groove 21.

[0014] The mop frame 20 of Fig. 1 is longitudinal and skeleton-like, as shown in the figures below. The skeleton has ridges that create a linear surface pressure against the floor to be cleaned. At the tips of the ridges there is elastic material 22, such as layers of soft plastic or rubber which enhance the pressing of the mop against the floor while keeping the mop in place.

[0015] Fig. 2A shows the structure of the flat mop 10 of Fig. 1 seen from the end of the mop frame. Fig. 2 shows the groove 21 to which the edge thickening of the mop is inserted, located at the edge of the mop frame 20. In Fig. 2, the groove 21 of the mop frame 20 is a channel that is open at both ends and dimensioned to suit the edge thickening of the mop. At the edge of the groove 21 there is a narrow gap which has been dimensioned to match the thin zone of the edge portion of the mop such that the thin zone of the edge portion of the mop fits into this gap but the edge thickening of the mop does not. Thereby the narrow gap of the groove 21 holds the edge thickening of the mop and at the same time also the mop in place at the edge of the mop frame.

[0016] Fig. 2B shows a side view of the flat mop 10 according to the invention, in which the mop 30 is in place, attached to the mop frame 20. The mop 30 has been attached to the mop frame 20 such that the edge thickening 31 of the mop 30 has been inserted into the groove 21 of the mop frame 20 through the open end of the groove. After this, the cleaning of a floor or other surface takes place such that the mop 30 is pressed with the mop frame of the flat mop 10 against the surface to be cleaned. Thereby the ridges located in the mop frame 20 of the flat mop 10 press the mop such that a linear surface pressure is created at the ridges and exerted on the surface to be cleaned. This surface pressure is clearly greater than the surface pressure created by a known flat mop plate. Therefore the cleaning effect achieved by the flat mop 10 according to the invention is also clearly greater than with known mops.

[0017] Fig. 3 shows the mop frame 20 of the flat mop 10 of Figs. 1 and 2 seen from the top. It can be seen from Fig. 3 that the mop frame 20 is skeleton-like such that it has ridges 23 creating a linear pressure. In Fig. 3, the ridges 23 form an open skeleton in which there are apertures between the ridges 23. This solution is advantageous because the mop frame 20 is light and its manufacture requires less raw materials, such as plastic. However, the mop frame 20 can also be made into a solid plate with similar ridges 23.

[0018] At the tips of the ridges 23 of the mop frame 20 of Fig. 3 there is elastic material 22, which can also be added to the ridges 23 simply by coating the ridges 23 with elastic material 22. Recesses can be made into the mop frame 20 to anchor the elastic material 22 to the mop frame. As the skeleton of the mop frame 20 is two-sided, there are ridges 23 on both of its sides and on top of them there is elastic material 22. The place of the swivel joint 24 of the mop frame 20 is at the centre of the mop frame 20. By means of this joint, the pole 11 can be tilted during cleaning and the mop frame 20 can also be turned upside down.

[0019] Fig. 4A is a sectional view of Fig. 3 along the line 4A-4A, showing clearly the ridges 23 of the mop frame 20 and the elastic material 22 on top of them. By means of the ridges 23 and the elastic material 22, linear surface pressure can be exerted on the surface to be cleaned. Thereby the surface pressure exerted on the surface to be cleaned is clearly greater than when the frame of the flat mop is a planar plate as in prior art. Alternatively, in certain cases the ridges 23 can be designed to be efficient enough without the addition of elastic material on top of the ridges 23.

[0020] Fig. 4A also clearly shows the shape of the groove 21 located at the edge of the mop frame 20. The groove is a straight parallel groove located on the longer side of the longitudinal mop frame 20 and having a narrow gap or tapering at its outer edge. The thickening located at the edge of the mop is inserted into the groove 21 whereby the mop is secured into the groove. The mop can be equipped with an edge reinforcement or a rigid corner piece to make it easier to insert into the groove 21 of the mop frame 20. The mop is not shown in Fig. 4.

[0021] Fig. 4B shows a sectional view of Fig. 3 at the centre of the mop frame 20 along the line 4B-4B. It can be seen in Fig. 4B that the centre of the mop frame 20 is open at the swivel joint 24, whereby the mop frame 20 can be turned upside down around the swivel joint 24.

[0022] The mop to be attached to the mop frame can be made from fabric, which is most advantageously microfibre fabric. Yarn or other layers that enhance cleaning and/or increase the absorption of water can be added to the fabric. The mop can also be made of two superposed layers between which a membrane that is impermeable to water is placed. Thereby both sides of the mop can be used separately without the dirty water of the used side of the mop entering through the mop to the clean side of the mop.

[0023] Fig. 5 shows a partly sectional view of the struc-

ture of the flat mop 10. Between the mop frame 20 and the pole 11 there is a swivel joint 24 by means of which the pole 11 can be tilted during the cleaning of a floor. By means of the swivel joint 24, the mop frame 20 can also be turned completely upside down such that both sides of the mop attached to the mop frame 20 can be used efficiently for cleaning a surface. Fig. 5 also shows another joint 15 and a fastening member 14 with which the pole 11 has been attached to the mop frame 20.

[0024] Fig. 6 shows the structure of the flat mop 10 according to the invention so that the mop frame 20 is seen from the top. The mop frame 20 can be turned into different positions, almost completely around, by means of the swivel joint 24. Thereby both sides of the mop attached to the mop frame 20 can be used for cleaning. The ridges 23 located on both sides of the mop frame 20 and the elastic material layers on their surface create an efficient, cleaning surface pressure. At the same time, the mop also stays securely in place thanks to the friction created by the elastic material layers.

[0025] Fig. 7A shows a partly sectional view of the flat mop 10 according to the invention, wherein a mop 30, the first side of which is in use, has been attached to the edge of the mop frame 20. The edge thickening 31 of the mop 30 has been inserted into the groove 20 of the mop frame 20 and the first side of the mop is pressed against the floor by means of the mop frame 20. The mop 30 can be, for example, made of microfibre fabric, of which there is only one layer or several layers on top of one another. Thereby the thin edge zone of the mop 30 can be made of thin plastic fabric. The edge thickening of the mop 30 attached to it can be a thicker edge ribbon or formed such that the ribbon or fabric has been folded twofold or such that it is formed by several layers of ribbon or fabric.

[0026] Fig. 7B shows the flat mop 10 of Fig. 7A in a position where the mop frame 20 has been turned upside down. Thereby the other side i.e. opposite side of the mop 30 attached to the edge of the mop frame 20 is in use. Most advantageously, the mop frame 20 is symmetrical such that the use of both sides of the mop 30 is similar. Thereby, when the first side of the mop 30 has become dirty during floor cleaning, the cleaning can be continued without interruption by turning the mop frame 20 and taking into use the clean side of the mop 30.

[0027] The swivel joint 24 of the mop frame 20 can be formed by an axle pin attaching itself to the pole portion and whose ends have been pushed into the holes formed in the mop frame 20, as shown in Fig. 6. The swivel joint 24 can also be formed such that the pole portion of the flat mop 10 has a flange which can rotate around a shaft attached to the mop frame 20. However, the swivel joint 24 can also be manufactured such that the mop frame 20 and the swivel joint 24 are manufactured simultaneously in a mould in which the axle pin is already in place. Thereby the axle pin locks into place in the mop frame 20 when casting the mop frame 20.

[0028] In the flat mop 10 according to the invention, it is essential that the mop frame 20 is formed by a skeleton, on both sides of which there have been formed ridges 23 that create a linear surface pressure on the surface to be cleaned, on top of which ridges there is most advantageously soft and/or elastic material 22, such as soft plastic or rubber. At the edge of the skeleton forming the mop frame 20 there is a groove 21, into which the edge thickening 31 at the edge of the mop 30 can be inserted to attach the mop to the mop frame. Between the pole 11 and the mop frame 20 there is a swivel joint 24 with the help of which the skeleton forming the mop frame 20 can be turned upside down, whereby the linear ridges 23 on both sides of the mop frame and both sides of the mop 30 can be used for cleaning the surface. The ridges 23 of the mop frame 20 can form an open skeleton which has at least one aperture between the ridges. This kind of structure is light and cost-effective to manufacture, whereby the ridges 23 creating the surface pressure can be easily formed.

[0029] The mop 30 of the flat mop 10 can have two or more superposed layers, whereby at least one membrane that is impermeable to water can be placed between the layers. By means of the membrane, both sides of the mop can be made to function separately such that the dirty water on the dirty side of the mop is not absorbed onto the clean side of the mop. In this way, it is always possible to put the clean side of the mop to use when the mop frame of the flat mop according to the invention is turned upside down, and the opposite side of the mop comes against the surface to be cleaned. It is also possible to place an edge reinforcement and/or a rigid corner piece to the corner of the mop 30 in conjunction with the edge thickening 31, which makes it easier to insert the mop into the groove 21 of the mop frame 20.

LIST OF REFERENCE NUMBERS

[0030]

10	Flat mop
11	Pole
14	Fastening member
15	Joint
20	Mop frame
21	Groove
22	Elastic material
23	Ridge
24	Swivel joint
30	Mop
31	Edge thickening

Claims

1. A flat mop (10), which comprises a mop frame (20), to which a mop (30) has been attached, and a pole (11) that has been attached to the mop frame with at least one swivelling joint (15, 24), **characterized in**

- **that** the mop frame (20) is formed by a skeleton, on both sides of which there has been formed ridges (23) that create a linear surface pressure on the surface to be cleaned,
- **that** at the edge of the skeleton forming the mop frame (20) there is a groove (21), into which the edge thickening (31) at the edge of the mop (30) can be inserted to attach the mop to the mop frame, and
- **that** between the pole (11) and the mop frame (20) there is a swivel joint (24) with the help of which the skeleton forming the mop frame (20) can be turned upside down, whereby the linear ridges (23) on both sides of the mop frame and both sides of the mop (30) can be used for cleaning the surface.

2. A flat mop (10) according to claim 1, **characterised in that** the ridges (23) of the mop frame (20) form an open skeleton which has at least one aperture between the ridges.

3. A flat mop (10) according to claim 1 or 2, **characterised in that** on top of the ridges (23) of the mop frame (20) there is soft and/or elastic material (22), such as soft plastic or rubber.

4. A flat mop (10) according to claim 1, 2 or 3, **characterised in that** the mop (30) of the flat mop (10) has two superposed layers between which there is a membrane that is impermeable to water.

5. A flat mop (10) according to any one of claims 1-4, **characterised in that** the mop of the flat mop (10) has an edge reinforcement and/or a rigid corner piece to make it easier to insert the mop into the groove (21) of the mop frame (20).

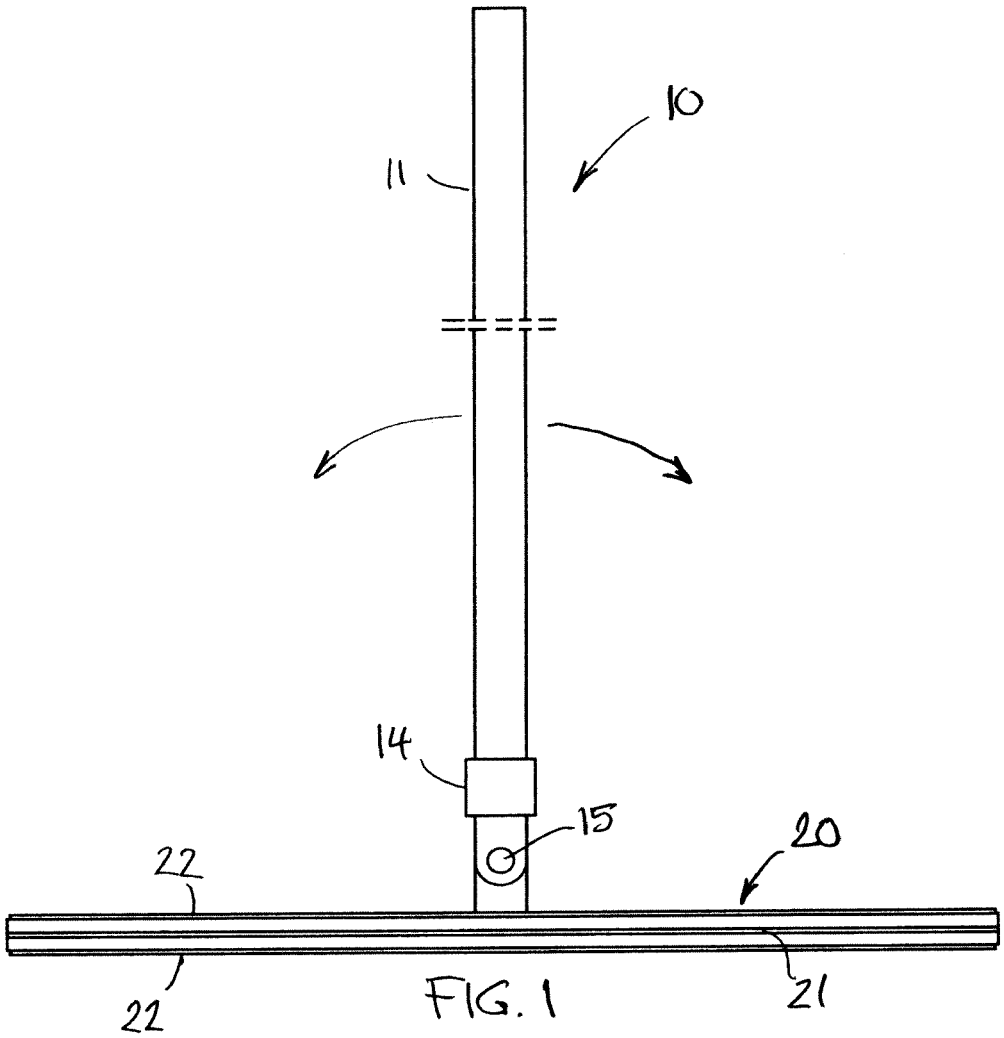

FIG. 1

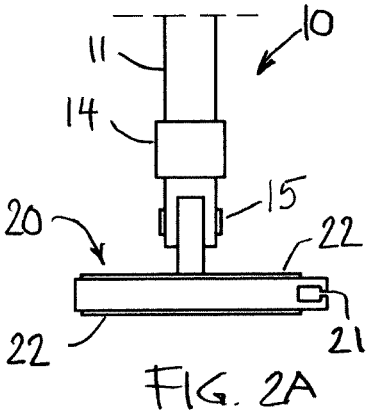

FIG. 2A

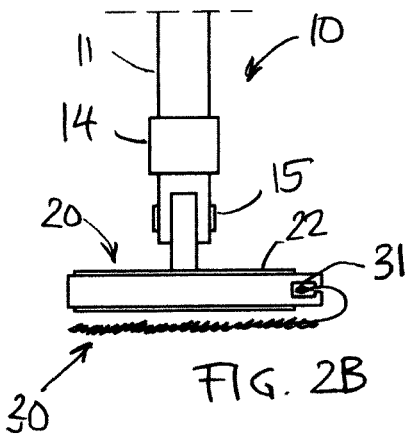

FIG. 2B

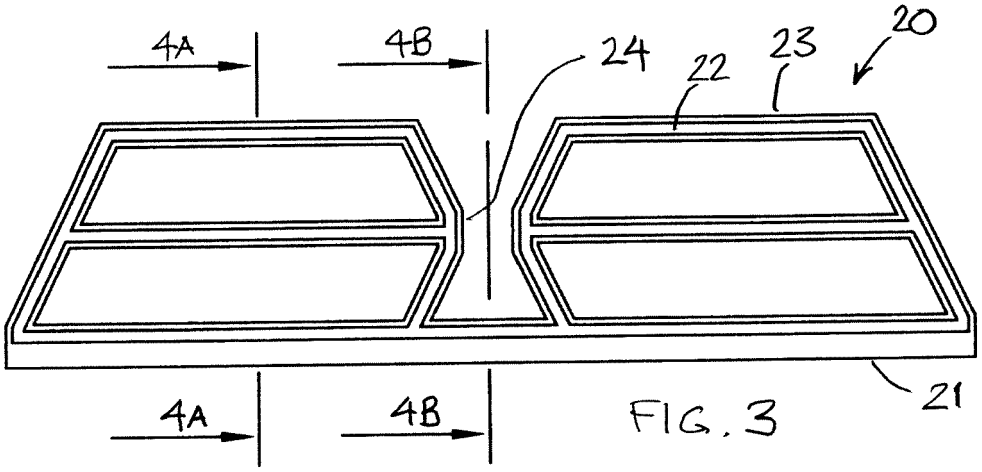

FIG. 3

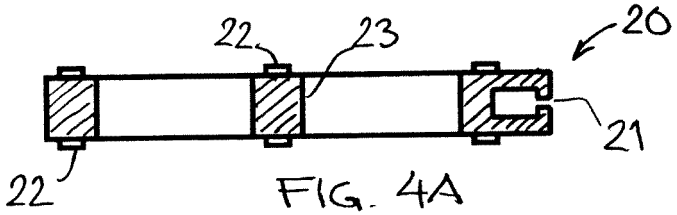

FIG. 4A

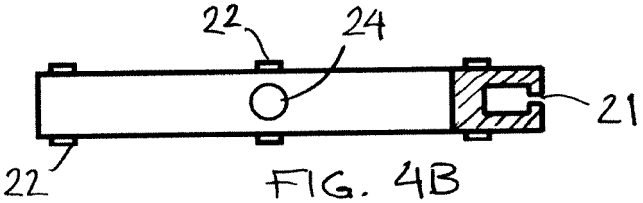

FIG. 4B

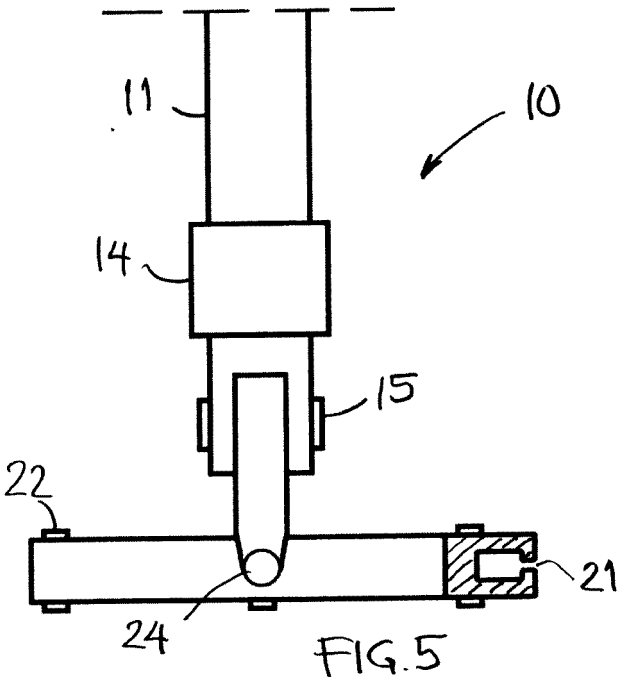

FIG. 5

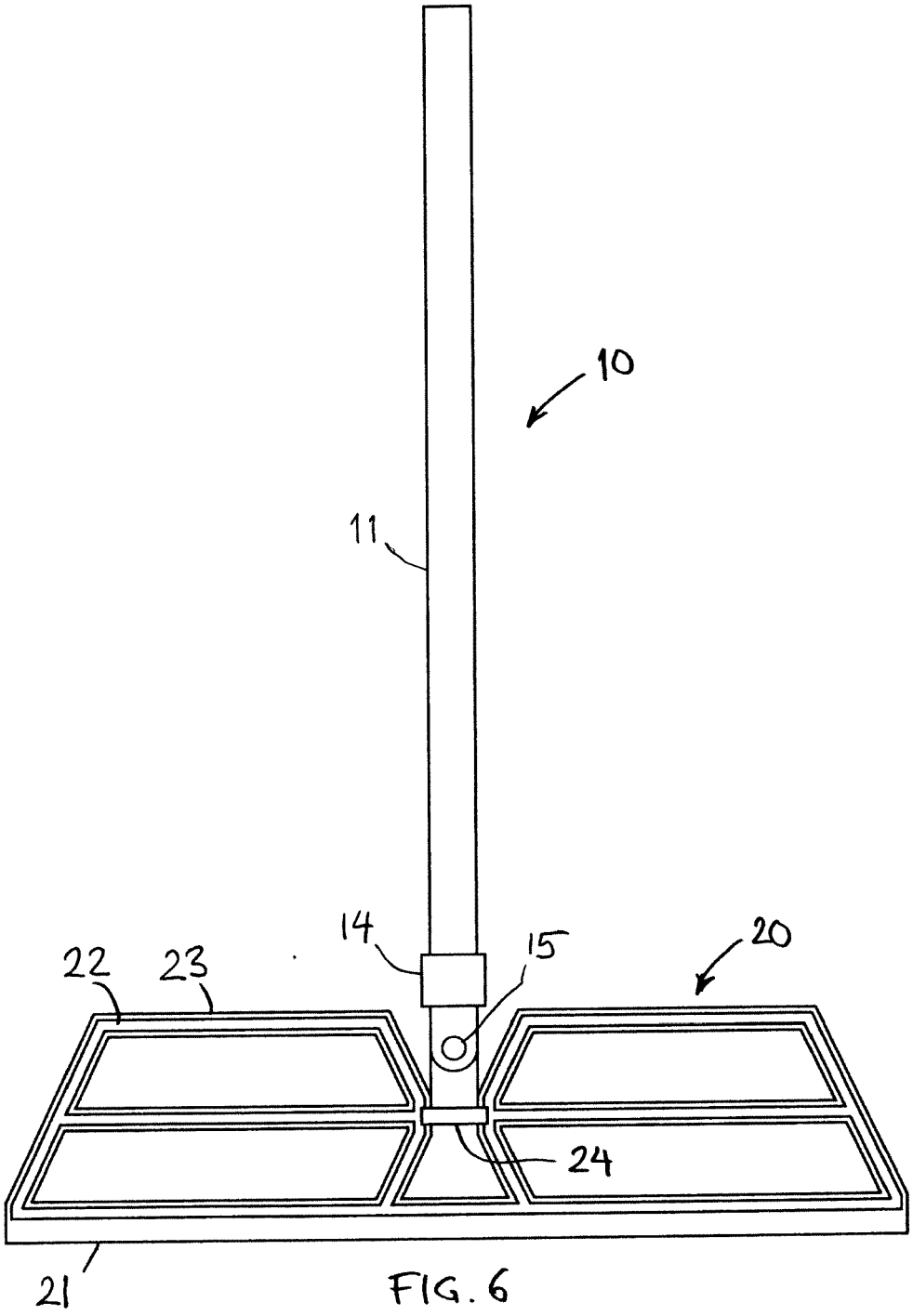

FIG. 6

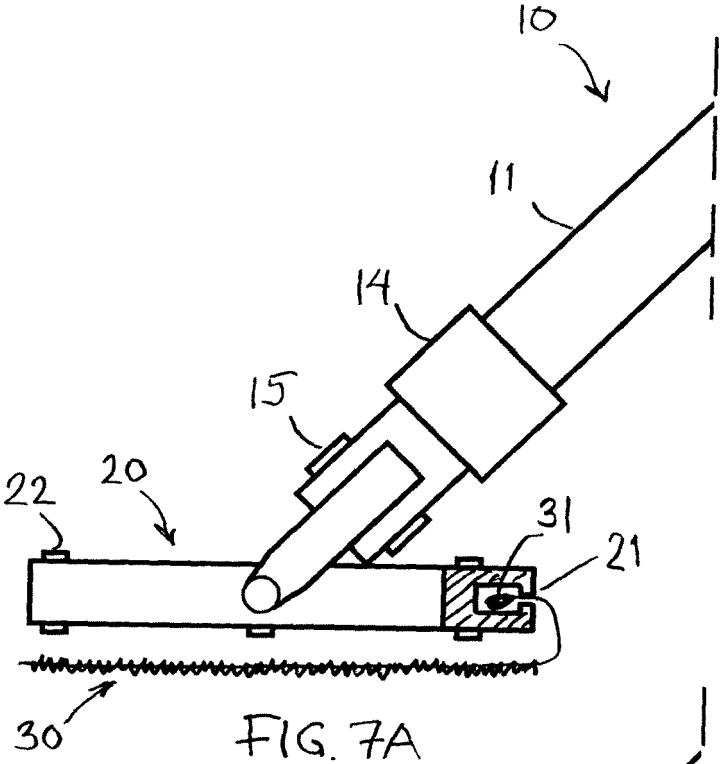

FIG. 7A

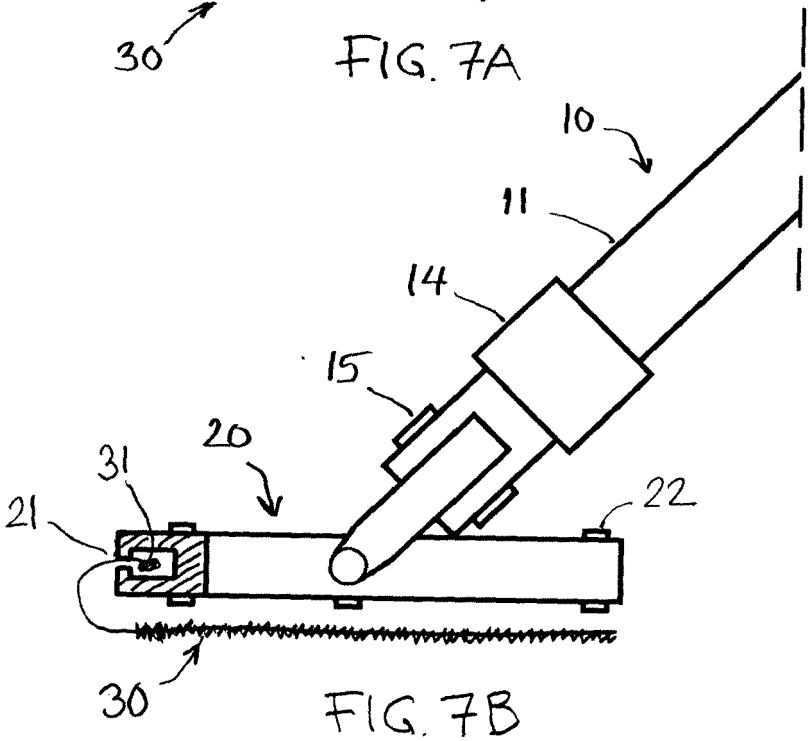

FIG. 7B

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 17 39 6002

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 Y A	US 2009/249570 A1 (ROSENZWEIG MAXIMILIAN [CA] ET AL) 8 October 2009 (2009-10-08) * paragraph [0019] - paragraph [0026]; figures 2A,2B,4A,4B,5,6 * -----	1,2,5 4 3	INV. A47L13/254 A47L13/258
X Y A	WO 2009/158597 A1 (EURO PRO OPERATING LLC [US]; ROSENZWEIG MAXIMILIAN [CA]; VRDOLJAK OGNJ) 30 December 2009 (2009-12-30) * column 56 - column 60 * -----	1,2,5 4 3	
Y	WO 00/27271 A2 (PROCTER & GAMBLE [US]; POLICICCHIO NICOLA JOHN [US]; RHAMY PRESTON JAM) 18 May 2000 (2000-05-18) * page 88, line 7 - page 90, line 31; figures 1,2,3 * -----	4	

TECHNICAL FIELDS SEARCHED (IPC)

A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 September 2017	Trimarchi, Roberto

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 39 6002

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.

07-09-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009249570 A1	08-10-2009	NONE	
WO 2009158597 A1	30-12-2009	CA 2741196 A1	30-12-2009
		CN 201481333 U	26-05-2010
		EP 2358252 A1	24-08-2011
		US 2009320231 A1	31-12-2009
		WO 2009158597 A1	30-12-2009
WO 0027271 A2	18-05-2000	AT 446706 T	15-11-2009
		AU 1816200 A	29-05-2000
		CA 2349726 A1	18-05-2000
		CA 2600566 A1	18-05-2000
		DE 29924439 U1	03-04-2003
		EP 1146809 A2	24-10-2001
		EP 2374397 A2	12-10-2011
		WO 0027271 A2	18-05-2000

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82