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(54) **Title:** ELECTRIC BROOM EQUIPPED COMPRISING A HANDLE

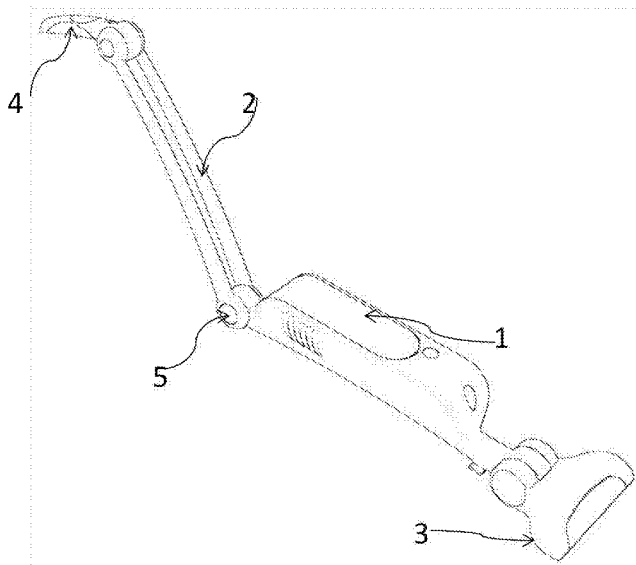


FIG. 1

(57) **Abstract:** An electric broom is described, which comprises a handle (2) and a body (1), characterized in that said handle is connected to the body through a joint (5), so that the handle can be rotated relative to the body.



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ELECTRIC BROOM EQUIPPED COMPRISING A HANDLE

DESCRIPTION

Field of the invention

The present invention relates to the field of suction and cleaning systems, more specifically to an electric broom handle and an electric broom equipped with said handle.

Background art

5 The vacuum cleaner is a particular household appliance intended for cleaning floors and other surfaces. Its internal mechanism allows it to suck dust and other particles mixed with air, and to hold them inside its body by means of a filter element, so as to release clean air. The motor, which is typically an electric one, allows sucking external air by creating a sort of a vacuum, by means of a fan, inside the vacuum cleaner.

10 The electric broom is a particular type of vacuum cleaner, the body of which is typically connected to the cleaning tool through a joint. Rigid or flexible extensions are normally included for connecting the cleaning tool.

In addition, the electric broom is fitted with a handle rigidly connected to the body.

15 When using an electric broom with a rigid handle, it is difficult to lay the broom horizontally in order to gain in-depth access with the cleaning tool, e.g. a brush, under elements such as beds and sofas: as a matter of fact, the user will be compelled to stoop, because the handle will drop to floor level.

Summary of the invention

20 It is therefore the object of the present invention to propose an electric broom handle and an electric broom equipped with said handle, which can overcome the above-mentioned problems.

According to the invention, a joint is arranged between the body and the handle, so that the body of the electric broom can be laid horizontally while keeping the handle upright, thus improving the comfort of the user, who will no longer have to stoop.

25 The present invention particularly relates to an electric broom handle and an electric broom equipped with said handle as set out in the claims, which are an integral part of the present description.

Brief description of the drawings

30 Further objects and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment (and variants) thereof and from

the annexed drawings, which are only supplied by way of non-limiting example, wherein:
Figure 1 shows an electric broom equipped with a swivel handle, in accordance with the present invention;

Figures 2, 3 and 4 show three views of the electric broom with the handle folded
5 backwards towards the body in the idle position.

In the drawings, the same reference numerals and letters identify the same items or components.

Detailed description of some embodiments of the invention

With reference to the drawings, 1 designates the body of the electric broom, 2 designates
10 the handle, 3 designates the cleaning tool, e.g. a brush connected to the body by a joint, and 4 designates the grip.

Preferably, the grip 4 is connected to the handle by means of a joint designed in a known manner, for adjusting the relative angle between the two parts.

According to the invention, the handle 2 is connected to the body 1 through a joint 5,
15 which separates the part handled by the user from the suction part.

Preferably, the joint 5 is so designed as to offer some resistance to the rotary folding of the handle relative to the body, e.g. by means of a stepped contact or a clutch between the two parts. For example, the stepped contact or clutch is controlled through a button fitted to the joint: when pressed, the handle can be folded; when released, the handle locks into the
20 upright or folded position.

Preferably, the handle is shaped like a fork with two spaced parallel arms 2' and 2'' extending from both sides of the joint 5, with an empty central area. The fork-shaped part with the empty central area allows the handle to be fully folded against the body, particularly the rear side of the body, without interfering with the joint, resulting in
25 improved storage and transport conditions due to the fact that the handle needs not be removed, and halved outer dimensions. Furthermore, the handle can be longer without interfering with the ground. Also the grip 4 can be folded towards the empty central area, thereby further reducing the outer dimensions of the handle.

Therefore, the maximum folding angle of the handle relative to the body is approx. 270°C,
30 i.e. 90°C forwards and 180°C backwards, with respect to the straight condition.

The above-described example of embodiment may be subject to variations without departing from the protection scope of the present invention, including all equivalent designs known to a man skilled in the art.

The elements and features shown in the various preferred embodiments may be combined together without however departing from the protection scope of the present invention. From the above description, those skilled in the art will be able to produce the object of the invention without introducing any further construction details.

CLAIMS

1. Electric broom comprising a handle (2) and a body (1), characterized in that said handle is connected to the body through a joint (5), so that the handle can be rotated relative to the body.
- 5 2. Electric broom according to claim 1, wherein said handle (2) is shaped like a fork with two spaced parallel arms (2', 2'') extending from both sides of the joint (5) and defining an empty intermediate area, and wherein said joint is adapted to allow the handle to be fully folded against the body.
3. Electric broom according to claim 1, wherein said joint (5) is adapted to offer a
10 determined resistance to the rotary folding of the handle.
4. Electric broom according to claim 3, wherein said resistance to folding is obtained by means of a stepped contact or a clutch between the two parts of the handle.
5. Electric broom according to claim 4, wherein said stepped contact or clutch is controlled through a button fitted to the joint.
- 15 6. Electric broom according to claim 2, comprising a grip (4) connected to said fork-shaped handle (2) by a joint, so that it can be rotated and folded inside said empty intermediate area.
7. Electric broom handle, characterized in that it is shaped in accordance with any one of the preceding claims.

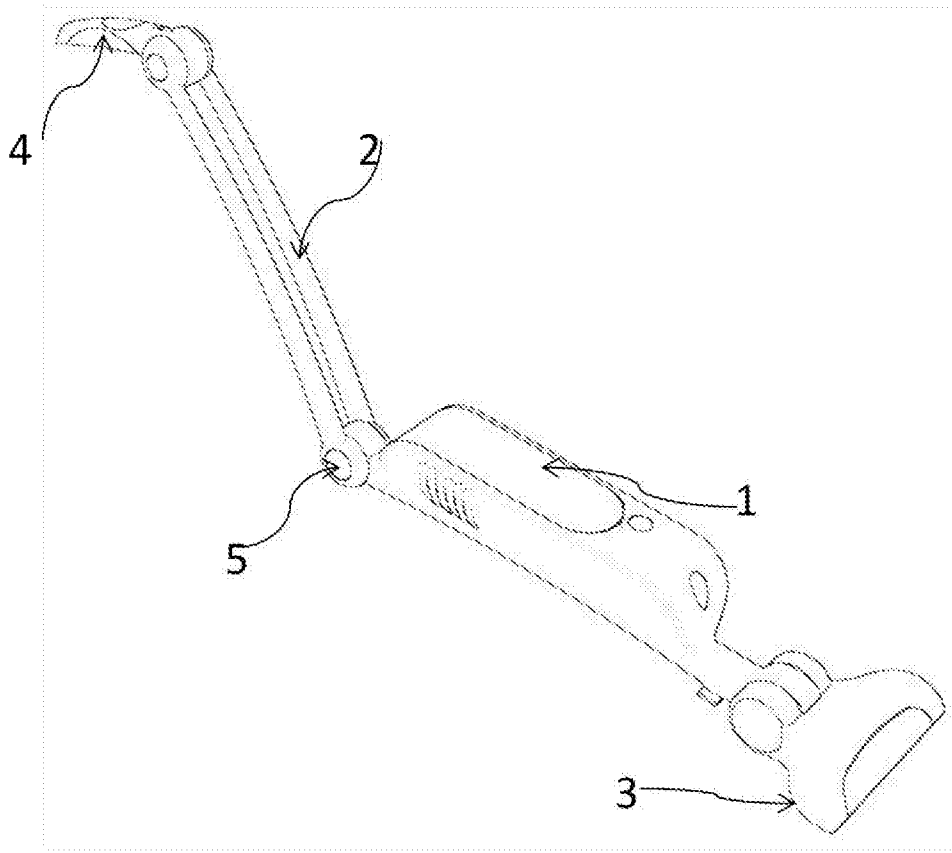


FIG. 1

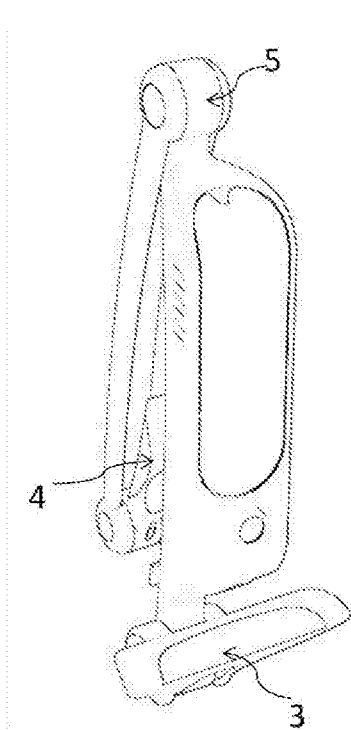


FIG. 2

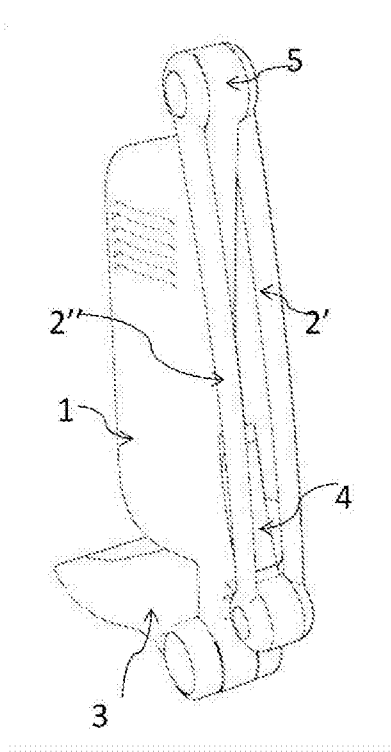


FIG. 3

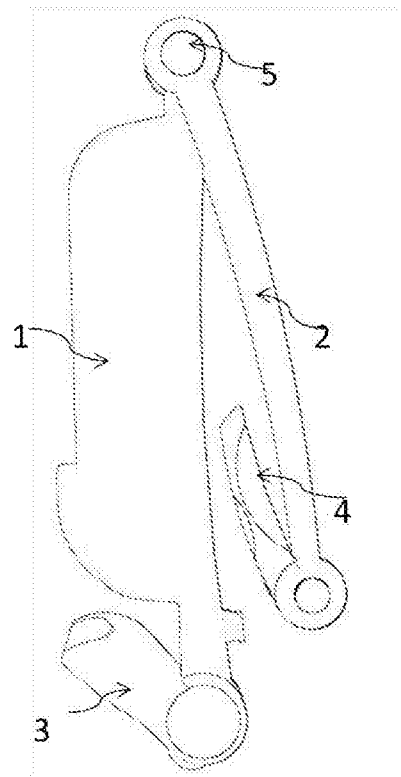


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2013/060750
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A. CLASSIFICATION OF SUBJECT MATTER INV. A47L11/40 A47L9/32 A47L5/30 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		
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	WO 2005/032735 A2 (ELECTROLUX HOME CARE PROD NA [US]; SEPKE ARNOLD [US]; BOBROSKY VINCENT) 14 April 2005 (2005-04-14) page 23, line 14 - page 42, line 2; figures 1-11,18-20 -----	1-7
X	US 2006/156509 A1 (LUEBBERING GREGORY W [US] ET AL) 20 July 2006 (2006-07-20) figures 1-3,7 -----	1-4,6,7
X	EP 1 955 631 A1 (BLACK & DECKER INC [US]) 13 August 2008 (2008-08-13) paragraph [0030] - paragraph [0031]; figures 1-6 ----- -/--	1,3,7
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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 13 March 2014	Date of mailing of the international search report 24/03/2014	
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 Masset, Markus	

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2013/060750

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/018676 A1 (DOVIA INTERNAT LTD [CN]; WEST JAMES A [GB]; TEUCHER MARK D [GB]; ELSWO) 12 February 2009 (2009-02-12) figure 1 <p style="text-align: center;">-----</p>	1,2,7
X	JP H08 299237 A (SANYO ELECTRIC CO) 19 November 1996 (1996-11-19) abstract; figures <p style="text-align: center;">-----</p>	1,3,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2013/060750

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005032735 A2	14-04-2005	US 2005091783 A1	05-05-2005
		US 2007094836 A1	03-05-2007
		US 2008276409 A1	13-11-2008
		US 2008276410 A1	13-11-2008
		US 2011219565 A1	15-09-2011
		WO 2005032735 A2	14-04-2005

US 2006156509 A1	20-07-2006	AU 2006206657 A1	27-07-2006
		CN 101262807 A	10-09-2008
		GB 2436053 A	12-09-2007
		JP 2008526449 A	24-07-2008
		KR 20070106526 A	01-11-2007
		US 2006156509 A1	20-07-2006
		WO 2006078580 A2	27-07-2006

EP 1955631 A1	13-08-2008	AU 2008200579 A1	28-08-2008
		CA 2620703 A1	12-08-2008
		CN 101243959 A	20-08-2008
		EP 1955631 A1	13-08-2008
		NZ 565800 A	31-05-2009
		US 2009019663 A1	22-01-2009
		US 2011308038 A1	22-12-2011

WO 2009018676 A1	12-02-2009	AU 2007357514 A1	12-02-2009
		CA 2695815 A1	12-02-2009
		CN 101938931 A	05-01-2011
		EP 2205139 A1	14-07-2010
		JP 2010535545 A	25-11-2010
		KR 20100057026 A	28-05-2010
		US 2010115719 A1	13-05-2010
WO 2009018676 A1	12-02-2009		

JP H08299237 A	19-11-1996	JP 3177444 B2	18-06-2001
		JP H08299237 A	19-11-1996
