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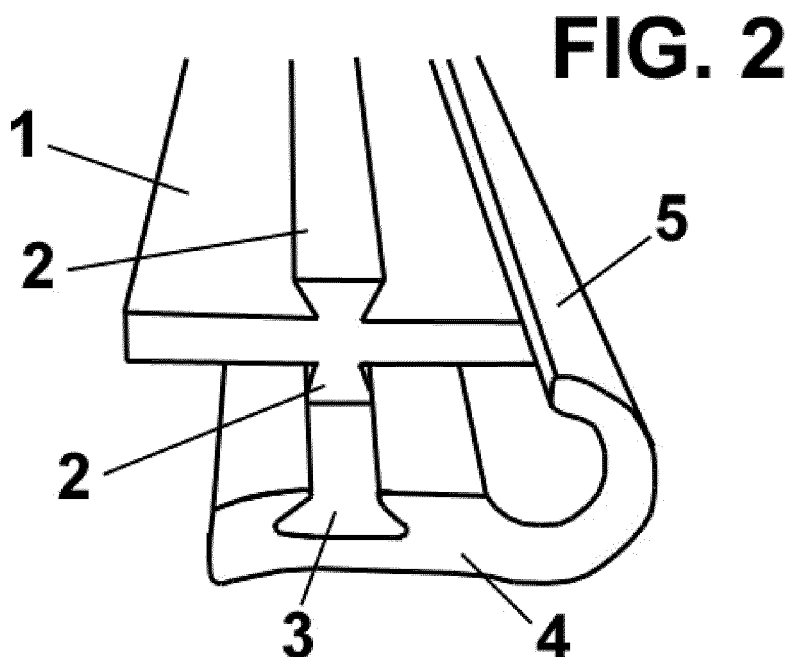
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(54) **WINDOW CLEANING DEVICE**

(57) The invention relates to a window cleaning device comprising a flexible lip (1) which defines at least one linear contact zone with the window to be cleaned and dried, said flexible lip (1) comprising at least one protrusion (2) which can be accommodated inside a

guide (3) of a support part (4), characterised in that said support part (4) also comprises a retaining ridge (5) in contact with a longitudinal edge of said flexible lip.

In this way, the device is compatible with almost all handles for existing window cleaners on the market.



## Description

[0001] The present invention relates to a window cleaning device, comprising a rigid support part for the gripping thereof with a handle, inside of which a flexible lip is placed making up a linear contact zone with the window to be cleaned and dried.

## Background of the invention

[0002] Window cleaning devices are widely known, with a variety and diversity of shapes with the aim of improving the service offered.

[0003] One type of these devices has a T-shaped configuration made up of a handle to which a suitable support part is secured which allows for the adaptation, assembly and replaceable use of a flexible rubber lip.

[0004] In the assembly position, a flexible lip edge is arranged in the use position, protruding from the support part and defining a linear contact zone with the window to be cleaned and dried.

[0005] For the assembly in the support part, the flexible lip comprises longitudinal protrusions on opposite faces, which are accommodated in complementary guides of the support part.

[0006] One example of this type of window cleaning device is described in utility model ES 1 097 431 U, of the same inventor as the present application.

[0007] However, this window cleaning device has the disadvantage of not being universal, i.e., it is not compatible with almost all handles for existing window cleaners on the market.

[0008] This is because it forces the handles to adapt to the support part, since it must have a design that adapts on both sides of the flexible lip so that it stays firmly secured inside the support part. Furthermore, this design forces the inclusion of one or more fasteners which secure the flexible lip on both ends so that the flexible lip cannot come out of the part, since said design does not enable the securing of the flexible lip in any other manner, which does not enable it to be adapted in any form to any handle that is not the one manufactured exclusively for said support part.

## Description of the invention

[0009] The mentioned drawbacks are resolved with the window cleaning device of the invention, while presenting other advantages which will be described below.

[0010] The window cleaning device according to the present invention comprises a window cleaning device comprising a flexible lip which defines at least one linear contact zone with the window to be cleaned and dried, said flexible lip comprising at least one protrusion which can be accommodated inside a guide of a support part, characterised in that said support part also comprises a retaining ridge in contact with a longitudinal edge of said flexible lip.

[0011] Thanks to this feature, the window cleaning device according to the present invention is universal, i.e., it is compatible with almost all handles for existing window cleaners on the market.

[0012] According to a preferred embodiment, said retaining ridge defines a C-shape in a transverse cross section.

[0013] Furthermore, said C-shape of the retaining ridge advantageously defines an angle no greater than 270° and the thickness of said retaining ridge decreases towards the end further away with respect to the support part.

[0014] Preferably, said flexible lip comprises two protrusions on two of the opposite faces thereof. Furthermore, said protrusion(s) is(are) longitudinal.

[0015] Advantageously, the window cleaning device according to the present invention also comprises a handle provided with a rocking securing element, for the releasable securing thereof to said support part.

[0016] According to a preferred embodiment, the or each protrusion has a shape of a transverse cross section of an isosceles triangle, for example, wherein said isosceles triangle defines an inner inclination between 50° and 60°.

[0017] Preferably, the two protrusions are symmetrical and have the same cross section, such that one or the other can be used indistinctly.

[0018] Furthermore, preferably, said rocking securing element is secured on said retaining ridge.

## Brief description of the drawings

[0019] To better understand what has been set forth, several drawings are attached in which a practical embodiment is schematically depicted merely by way of non-limiting example.

Figure 1 is an exploded plan view of the components which make up the window cleaning device according to the present invention; and

Figure 2 is a perspective view of one end of the support part, the flexible lip being partially placed in the position thereof in the support part in order to be able to see the guide and the retaining ridge of said support part.

## Description of a preferred embodiment

[0020] The window cleaning device according to the present invention comprises a flexible lip 1, for example made of rubber, which defines two zones or four edges having linear contact with the window to be cleaned and dried.

[0021] Said flexible lip 1 is in the shape of an elongated strip and comprises two longitudinal protrusions 2, arranged on opposite sides of said flexible lip 1. It should be noted that in the embodiment shown, the flexible lip 1 comprises two longitudinal protrusions 2, but it could

comprise one single protrusion 2. The advantage of having two longitudinal protrusions 2 is that the position of the flexible lip 1 can be changed and inverted to alternatively use the two zones in linear contact with the window.

**[0022]** To do so, the protrusions 2 are symmetrical and have the same cross section, such that in any of the possible assembly positions the contact zone in use is always in the same position with respect to the window cleaning device.

**[0023]** The window cleaning device according to the present invention also comprises a support part 4, for example made of metal, which defines a longitudinal guide 3 and a retaining ridge 5. This retaining ridge 5 preferably defines an angle no greater than 270°, and the thickness thereof is variable, such that it decreases towards the distal end thereof with respect to the joint thereof with the support part 4.

**[0024]** Said longitudinal guide 3 is used to accommodate one of said longitudinal protrusions 2, while the retaining ridge 5, preferably C-shaped, is used to retain a longitudinal edge of said flexible lip 1, specifically the longitudinal edge of the flexible lip 1 opposite from the linear contact zone which is used to clean or dry a window.

**[0025]** As seen in figure 2, each protrusion 3 has a geometric shape of an isosceles triangle in a transverse cross section, for example, with a necessary inclination of about 53 degrees. Consequently, the guide 3 will also have a complementary isosceles triangle shape in a transverse cross section.

**[0026]** Thanks to this design, the flexible lip 1 is secured by one of the protrusions 2 and/or one of the edges of the flexible lip 1, the other edge of the flexible lip 1 being totally free, but being secured in a secure manner to the support part 4, which enables it to be universal for almost any type of handle.

**[0027]** In order to handle it with ease, the window cleaning device according to the present invention comprises a handle 6 able to be coupled to the support part 4 by means of a securing element 7. Said securing element 7 presses on the flexible lip 1, such that clips are not necessary on the ends which is common in the art.

**[0028]** In order to facilitate the coupling, the handle 6 comprises a rocking securing element 7, which rocks between a securing position and a released position, in order to enable the handle to be separated from the support part 4.

**[0029]** The operation of the window cleaning device according to the present invention is very simple. In order to place the flexible lip 1 in the support part 4, it is simply necessary to longitudinally slide said flexible lip 1, such that one of the protrusions 2 is accommodated in the guide 3. Then, the handle 6 is coupled to the support part 4 by means of said securing element 7.

**[0030]** Furthermore, if the contact zone or edge used to clean or dry the window is to be changed, the flexible lip 1 must be removed from the support part 4, also sliding longitudinally and/or frontally in order to flip said flexible

lip 1 and introduce it again into said support part 4 as described previously.

**[0031]** Despite having referred to a specific embodiment of the invention, it is evident for one skilled in the art that the window cleaning device that has been described is susceptible to a number of variations and modifications, and that all the mentioned details can be replaced with other technically equivalent ones without departing from the scope of protection defined by the attached the claims.

## Claims

1. A window cleaning device comprising a flexible lip (1) which defines at least one linear contact zone with the window to be cleaned and dried, said flexible lip (1) comprising at least one protrusion (2) which can be accommodated inside a guide (3) of a support part (4), **characterised in that** said support part (4) also comprises a retaining ridge (5) in contact with a longitudinal edge of said flexible lip.
2. The window cleaning device according to claim 1, wherein said retaining ridge (5) defines a C-shape in a transverse cross section.
3. The window cleaning device according to claim 2, wherein said C-shape of the retaining ridge (5) defines an angle no greater than 270°.
4. The window cleaning device according to claim 2 or 3, wherein the thickness of said retaining ridge (5) decreases towards the end further away with respect to the support part (4).
5. The window cleaning device according to claim 1, wherein said flexible lip (1) comprises two protrusions (2) on two of the opposite faces thereof.
6. The window cleaning device according to claim 1 or 5, wherein said protrusion(s) (2) is(are) longitudinal.
7. The window cleaning device according to claim 1, which also comprises a handle (6) provided with a rocking securing element (7), for the releasable securing thereof to said support part (4).
8. The window cleaning device according to claim 1, 5 or 7, wherein the or each protrusion (2) has a shape of a transverse cross section of an isosceles triangle.
9. The window cleaning device according to claim 8, wherein said isosceles triangle defines an inner inclination between 50° and 60°.
10. The window cleaning device according to claim 5, wherein the two protrusions (2) are symmetrical and

have the same cross section.

11. The window cleaning device according to claim 7, wherein said rocking securing element (7) is secured on said retaining ridge (5) and rests on the flexible lip (1).

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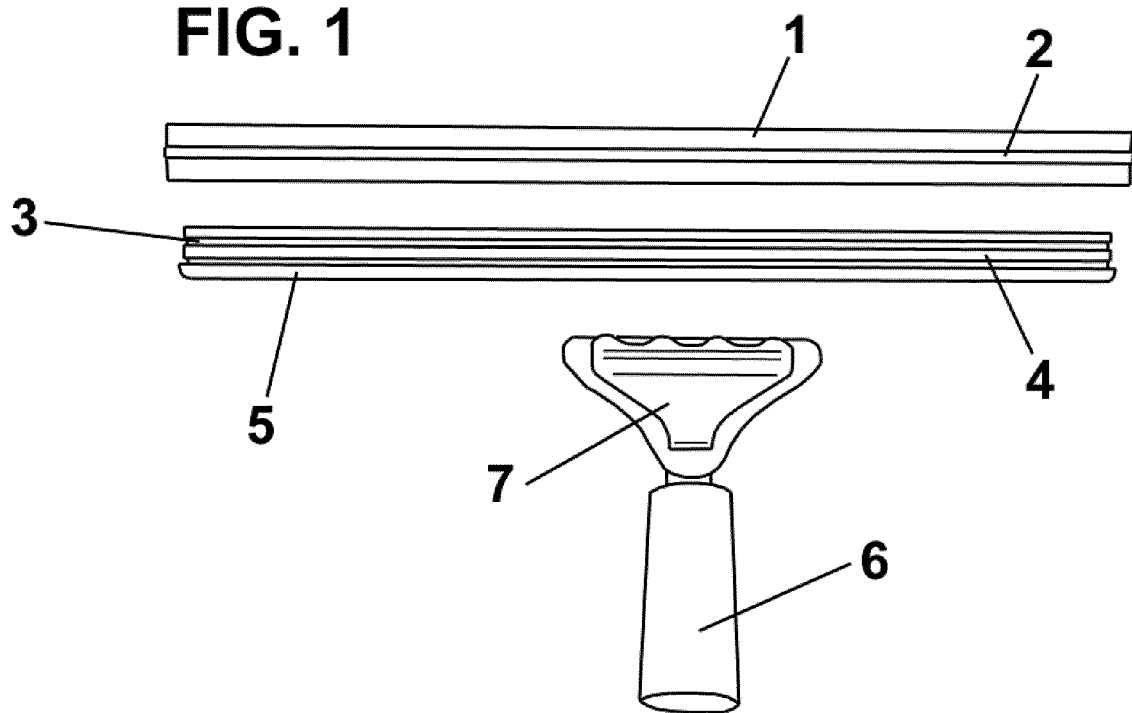
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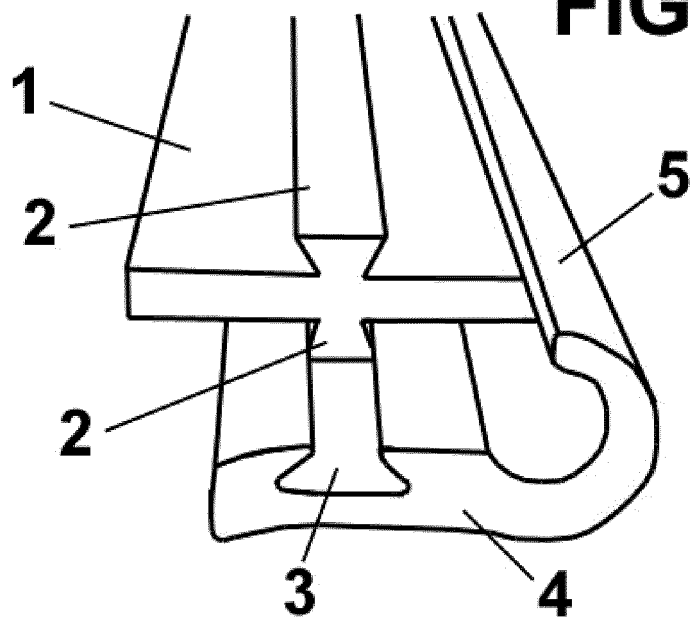
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**FIG. 1**



**FIG. 2**



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2016/070863

<p>A. CLASSIFICATION OF SUBJECT MATTER</p> <p><b>A47L1/06</b> (2006.01)  <b>B25G3/00</b> (2006.01)          According to International Patent Classification (IPC) or to both national classification and IPC</p>															
<p>B. FIELDS SEARCHED</p>															
<p>Minimum documentation searched (classification system followed by classification symbols)  <b>A47L, B25G</b></p>															
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<p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p> <p><b>EPODOC, INVENES, WPI</b></p>															
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p>															
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>ES 201708U U (MARTINEZ GONZALEZ JOSE) 01/10/1975, page 1, line 1 - page 3, line 55; figures 1 - 2.</td> <td>1-11</td> </tr> <tr> <td>A</td> <td>GB 1405845 A (MT DEVELOPMENTS LANCASHIRE LTD) 10/09/1975, page 1, line 1 - page 2, line 19; figures 1 - 2.</td> <td>1-3</td> </tr> <tr> <td>A</td> <td>US 5930863 A (SAMUELSSON SOREN) 03/08/1999, column 2, line 20 - column 6, line 36; figures 1 - 8.</td> <td>1-11</td> </tr> <tr> <td>A</td> <td>AU 2004222856 A1 (RAVEN PRODUCTS PTY LTD) 19/05/2005, page 2, line 5 - page 15, line 2; figures 1 - 10.</td> <td>1-11</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	ES 201708U U (MARTINEZ GONZALEZ JOSE) 01/10/1975, page 1, line 1 - page 3, line 55; figures 1 - 2.	1-11	A	GB 1405845 A (MT DEVELOPMENTS LANCASHIRE LTD) 10/09/1975, page 1, line 1 - page 2, line 19; figures 1 - 2.	1-3	A	US 5930863 A (SAMUELSSON SOREN) 03/08/1999, column 2, line 20 - column 6, line 36; figures 1 - 8.	1-11	A	AU 2004222856 A1 (RAVEN PRODUCTS PTY LTD) 19/05/2005, page 2, line 5 - page 15, line 2; figures 1 - 10.	1-11
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<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p>															
<table border="0"> <tr> <td>* Special categories of cited documents:</td> <td>"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</td> </tr> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance.</td> <td></td> </tr> <tr> <td>"E" earlier document but published on or after the international filing date</td> <td></td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure use, exhibition, or other means.</td> <td>"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 documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td>"&amp;" document member of the same patent family</td> </tr> </table>	* Special categories of cited documents:	"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	"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)	"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	"O" document referring to an oral disclosure use, exhibition, or other means.	"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 documents, such combination being obvious to a person skilled in the art	"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family			
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<p>Date of the actual completion of the international search  <b>26/07/2017</b></p>	<p>Date of mailing of the international search report  <b>(28/07/2017)</b></p>														
<p>Name and mailing address of the ISA/  <b>OFICINA ESPAÑOLA DE PATENTES Y MARCAS</b>          Paseo de la Castellana, 75 - 28071 Madrid (España)          Facsimile No.: 91 349 53 04</p>	<p>Authorized officer          E. Álvarez Valdés          Telephone No. 91 3498419</p>														

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/ES2016/070863

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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