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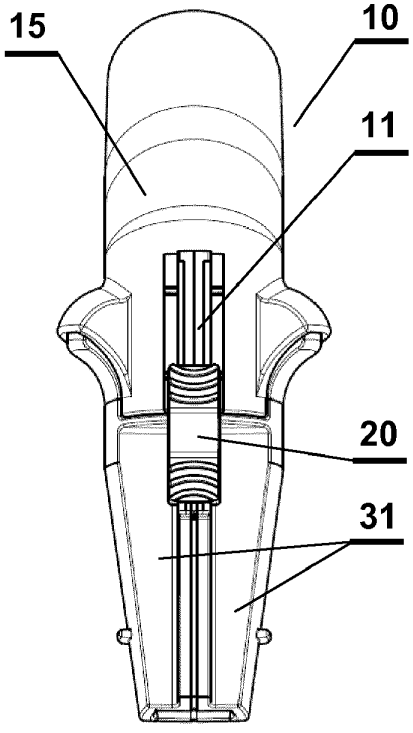
(54) MULTIFUNCTIONAL NOZZLE

(57) A multifunctional nozzle (10) for a vacuum cleaner comprising a tube connector and at least two arms (31) which are pivotably connected to the tube connector whereas the arms in the folded first position creates the crevice nozzle or the arms creates in the unfolded second position the upholstery nozzle, whereas at least one pivotable arm (31) is secured by a slider (20) in the crevice nozzle position.

The present invention provide a multifunctional nozzle with a pair of pivotable arms which can be set in different positions for different cleaning surfaces e.g. edges, slots or floor. Location of the multifunctional nozzle pivotable arms in the crevice nozzle position is secured by slider which prevents from uncontrolled movement of the pivotable arms during vacuuming.

Fig. 1



EP 3 272 262 A1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a multifunctional nozzle for a vacuum cleaner comprising a tube connector and at least two arms which are pivotably connected to the tube connector whereas the arms creates a crevice nozzle in a folded first position and an upholstery nozzle in an unfolded second position.

STATE OF THE ART

[0002] The patent application US 5 502 870 A discloses a multi-function vacuum cleaner nozzle for attachment to the end of a vacuum cleaner hose. The device comprises a housing body, a dust brush, and two pivotal cleaning arms. Housing has three ports and extending therethrough, with ports being adapted to receive a suction conduit. Port is fitted with dust brush which snaps into a recess encircling said housing. Insertion of the conduit into port selects the arms to receive suction air and substantially doses off port. Arms are attached on the end of port which is opposite port. Friction ridges and interact with each other, allowing several stable positions for arms. This makes the arms adjustable between upholstery, crevice, edge and corner tool positions. Insertion of said conduit into port selects said dust brush to receive suction air and substantially closes off port.

[0003] In the presented solution the friction ridges do not provide stable fixing of the arms in required position. Moreover, after long usage of the nozzle the friction ridges can be damaged as a result of friction. Therefore the nozzle can lose its functionality.

THE AIM OF THE INVENTION

[0004] It is the object of the present invention to provide further development of the state of the art. A further object of the present invention is to prevent uncontrolled movement of the pivotable arms during usage.

SUMMARY OF THE INVENTION

[0005] This object of the invention is solved by a multifunctional nozzle for a vacuum cleaner by the features of the characterizing part of the claim 1. Constructions and further developments, which can be applied separately or in combination with each other, are set forth in the dependent claims.

Definitions / advantages

[0006] It is to be understood that both the foregoing general description and the following detailed description are exemplary, and are intended to provide further explanation of the invention as claimed. Other advantages and features of the invention will be apparent from the following description, drawings and claims.

[0007] According to the invention the nozzle has at least one arm. Usually nozzle has two arms which can be positioned as a crevice nozzle or an upholstery nozzle.

[0008] At least one arm is secured in the crevice position and the other arm is in an upholstery position which provides the nozzle with a third position, useful for cleaning edges.

[0009] Secured according to the invention means that it is not possible to move the at least one pivotable arm out of this position into another position.

[0010] According to the invention the slider is a movable element preferably out of plastic, which is guided by slider guide. Preferably the slider guide consists of at least two parts. One part is placed on the tube connector and one another part is placed on one of the at least two arms. The second function of the second part of the slider guide is to fix a brush to the pivotable arms. The slider guide elongates from the tube connector to at least on arm.

In the preferred embodiment of the invention the slider guide consists of at least three parts. One part of the slider guide is placed on the tube connector and one another part is placed on one of the at least two arms. The slider guide elongates from the tube connector to at least on arm.

PREFERED EMBODIMENT OF THE INVENTION

[0011] In the preferred embodiment a slider has a at least one slider protrusion which prevents uncontrolled movement of the slider. The slider is an element movable from the tube connector part towards the pivotable arms to firmly join the pivotable arms in the folded first position. Folded first position means that the angle between the pivotable arms are 0°. In such position an air inlet of the multifunctional nozzle is small and the nozzle can be used for cleaning small limited spaces e.g. slots. To unblock the movement of the pivotable arms the slider has to be moved from the arms towards the tube connector. The movement of the slider is carried along a slider guide which elongates from the tube connector to the arms. When the slider is on the tube connector part the pivotable arms are movable. Slider protrusions are small elements which are placed on the slider. At least one slider protrusion cooperates with at least one blocking element of the multifunctional nozzle. Blocking elements are small protrusions which are placed on the tube connector. Cooperation between slider protrusions and bocking elements means that the slider protrusions and blockig elements can be detachable connected with each other. In order to change position of the slider the user have to use some force to disassemble or assemble the connection. The tube connector is a part of a multifunctional nozzle designed for its fixing with a hose of the vacuum cleaner.

[0012] In another embodiment of the invention the slider is guided by a slider guide which means that the slider

can change its position only along said slider guide.

[0013] In another embodiment of the invention the pair of pivotable arms are guided by grooves and studs which means that the pair of pivotable arms are connected rotatably with the tube connector. Rotatable connection is provided by cooperation of grooves with corresponding studs. Each groove is made on each pivotable arm and the stud is small protrusion made on the tube connector of the multifunctional nozzle.

[0014] In a favourable embodiment of the invention the pair of pivotable arms in unfolded second position forms and angle between 175° and 185°. In a specialized form the angle α is 180°. The pair of pivotable arms in such unfolded second position creates an upholstery nozzle which is dedicated for plain surfaces e.g. for floor. When the pair of pivotable arms are in unfolded second position a brush can be mounted to said arms. The brush is additional detachable element of preferably rectangular shape. The brush has a fastening means which are fastened with the pivotable arms by slider guide. Fastening of the brush to the said pair of pivotable arms is realized by connecting the second part of the slider guide which is placed on each of two pivotable arms with the fastening elements placed on the brush. Preferably the fastening elements has hooked shape. The brush has plurality of dust picking bristles.

LAUDATIO

[0015] The present invention provide a multifunctional nozzle with a pair of pivotable arms which can be set in different positions for different cleaning surfaces e.g. edges, slots or floor. Location of the multifunctional nozzle pivotable arms in the crevice nozzle position is secured by slider which prevents from uncontrolled movement of the pivotable arms during vacuuming.

BRIEF DESCRIPTION OF THE FIGURES

[0016] The features of the invention believed to be novel are set forth with particularity in the appended claims. The invention itself, however, may be best understood by reference to the following detailed description of the invention, which describes an exemplary embodiment of the invention, taken in conjunction with the accompanying drawings, in which:

Fig. 1 shows a multifunctional nozzle in front view with folded pivotable arms in the crevice nozzle position with the slider blocking the pivotable arms;

Fig. 2 shows the multifunctional nozzle is a side view with additional enlarged area of the slider;

Fig. 3 shows the multifunctional nozzle in front view with pivotable arms folded together in the crevice nozzle position with the slider on the tube connector part ;

Fig. 4 shows the multifunctional nozzle in front view with unfolded pivotable arms in the upholstery nozzle position with the slider on the tube connector part;

Fig. 5 shows the pivotable arm;

Fig. 6 shows the multifunctional nozzle in a bottom view

Fig. 7 shows the multifunctional nozzle with brush fixed to the pivotable arms.

DETAIL DESCRIPTION OF THE INVENTION

[0017] In cooperation with attached drawings, the technical contents and detailed description of the present invention are described thereinafter according to a preferable embodiment, being not used to limit its executing scope. Any equivalent variation and modification made according to appended claims is all covered by the claims claimed by the present invention.

[0018] In the following description of the preferred embodiments of the present invention, similar identical reference numbers designate identical or comparable components.

[0019] The electrical vacuum cleaner comprises a nozzle for sucking up dust from the floor or other cleaning surface, a pipe which is connected to the handle, a flexible hose wherein the dust is guided to the vacuum cleaner. Inside the vacuum cleaner there is a motor and the fan for creating air stream and filter system for collecting dust.

[0020] Reference is made to Fig. 1 which is a front view of a multifunctional nozzle (10). The multifunctional nozzle (10) has a pair of pivotable arms (31) which are in the crevice nozzle position. The multifunctional nozzle (10) has a slider (20) and the slider guide (11). One part of the slider guide (11) is placed on the tube connector (15) and the second part of the slider guide (11) is placed on the pivotable arms (31). The second part of the slider guide (11) is divided into two parts and each part is placed on each pivotable arm (31). In such position the slider (20) blocks the movement of the pivotable arms (31) and prevent from uncontrolled, undesirable pivotable arms (31) position change. When both pivotable arms (31) are in crevice nozzle position the multifunctional nozzle (10) can be used for collecting dust from slots or corners which is difficult to reach by upholstery nozzle.

[0021] Reference is made to Fig. 2 which shows the multifunctional nozzle (10) in a side view with additional enlarged area of the slider (20). The slider (20) is in a blocking position which means that it prevents the pivotable arms (31) from changing its position during usage as a crevice nozzle. The slider movement is limited and defined by the slider guide (11). The slider protrusions

(21) mesh with blocking elements (12) preventing from falling down the slider (20) out of the nozzle (10) in the upholstery nozzle position or preventing retreat of the slider from position when said slider (20) blocks the pivotable arms (31).

[0022] Reference is made to Fig. 3 which shows the multifunctional nozzle (10) with pivotable arms (31) folded together in the crevice nozzle position with the slider (20) on the tube connector (15) part. In such slider position (20) the pivotable arms (31) can be set in folded but not secured position or said arms (31) can be set in unfolded position.

[0023] Fig. 4 shows the multifunctional nozzle (10) with unfolded pivotable arms (31) in the upholstery nozzle position with the slider (20) on the tube connector (15) part. In such position the pivotable arms (31) creates almost full angle and can be used for picking up dust from any planar surface. The angle α between pivotable arms are shown.

[0024] Fig. 5 shows a pivotable arm (31) with groove (32) for receiving the stud (14). The pivotable arms (31) are moved by rotation with respect to the rotating point (34).

[0025] Fig. 6 shows a nozzle (10) with pivotable arms (31) in an unfolded second position. The movement of the pivotable arms (31) are determined by two groves (32) with stud (14) not shown in the figure. In front of the pivotable arms (31) there is a brush (40) with bristles (42), said brush (40) is connected to the pivotable arms (31) by latches (41). In this figure the slider (20) is placed on the slider guide (11) of the tube connector (15). By moving the slider (20) towards the brush (40) the brush itself can be disconnected in the easy manner.

[0026] The present invention provide a multifunctional nozzle with a pair of pivotable arms which can be set in different positions for different cleaning surfaces e.g. edges, slots or floor. Location of the multifunctional nozzle pivotable arms in the crevice nozzle position is secured by slider which prevents from uncontrolled movement of the pivotable arms during vacuuming.

LIST OF REFERENCE SIGNS

[0027]

10 nozzle
11 slider guide
12 blocking element
13 inlet
14 stud
15 tube connector

20 slider
21 slider protrusion

31 pivotable arm
32 groove
34 rotating point
40 brush
41 fastening element
42 bristles

α angle between arms in upholstery nozzle position

Claims

1. A multifunctional nozzle (10) for a vacuum cleaner comprising a tube connector (15) and at least two arms (31) which are pivotably connected to the tube connector (15) whereas the arms creates a crevice nozzle in a folded first position and an upholstery nozzle in an unfolded second position **characterized in that** at least one pivotable arm (31) is secured by a slider (20) in the crevice nozzle position.

2. A nozzle (10) according to claim 1, **characterized in that** the slider (20) has at least one slider protrusion (21) preventing uncontrolled movement of the slider (20).

3. A nozzle (10) according to claim 2, **characterized in that** at least one of the slider protrusion (21) cooperates with at least one blocking element (12) of the multifunctional nozzle (10).

4. A nozzle (10) according to any of preceding claims, **characterized in that** the slider (20) is guided by a slider guide (11).

5. A nozzle (10) according to any of preceding claims, **characterized in that** the pair of pivotable arms (31) are guided by grooves (32) and studs (14).

6. A nozzle (10) according to any of preceding claims, **characterized in that** the pair of pivotable arms (31) in unfolded second position forms an angle α between 175° and 185°.

7. A nozzle (10) according to any of preceding claims, **characterized in that** a brush (40) is mounted on pivotable arms (31) in the unfolded second position.

8. A nozzle (10) according to claim 7, **characterized in that** the brush (40) has a fastening means (41) by which said brush (40) is fastened to the slider guide (11).

9. A nozzle (10) according to claim 7 to 8 **characterized in that** the brush (40) has plurality of bristles (42).

Fig. 1

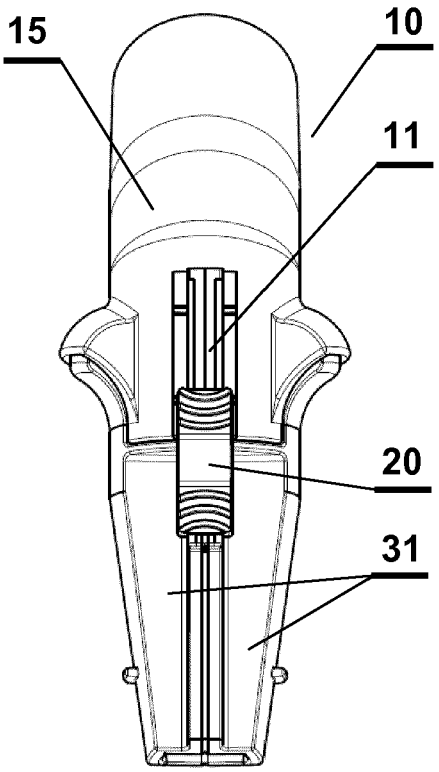


Fig. 2

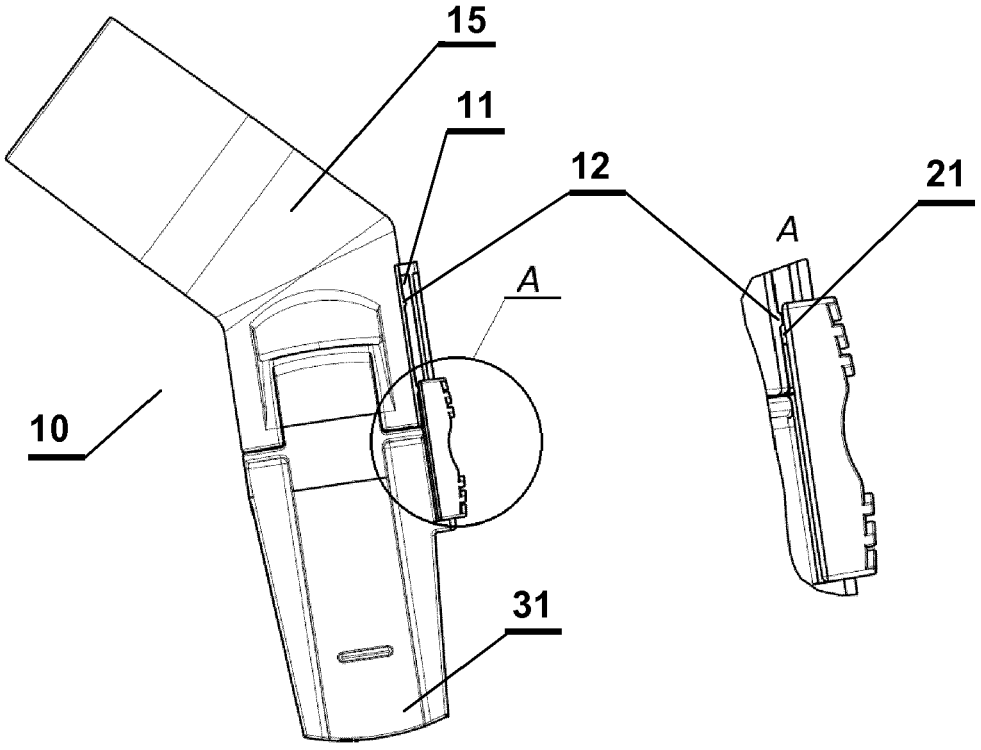


Fig. 3

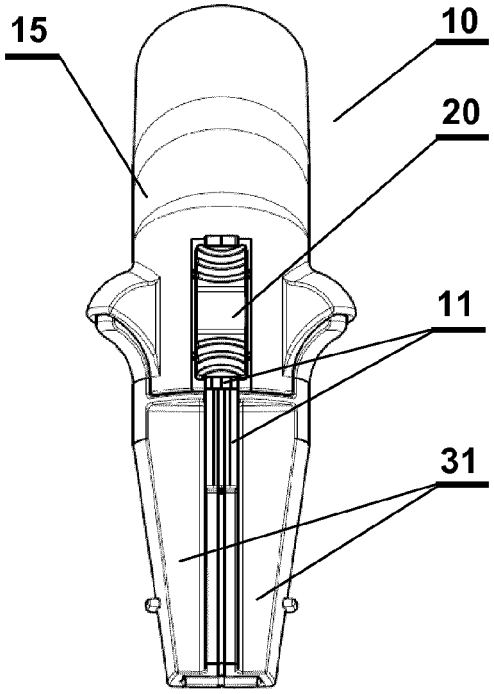


Fig. 4

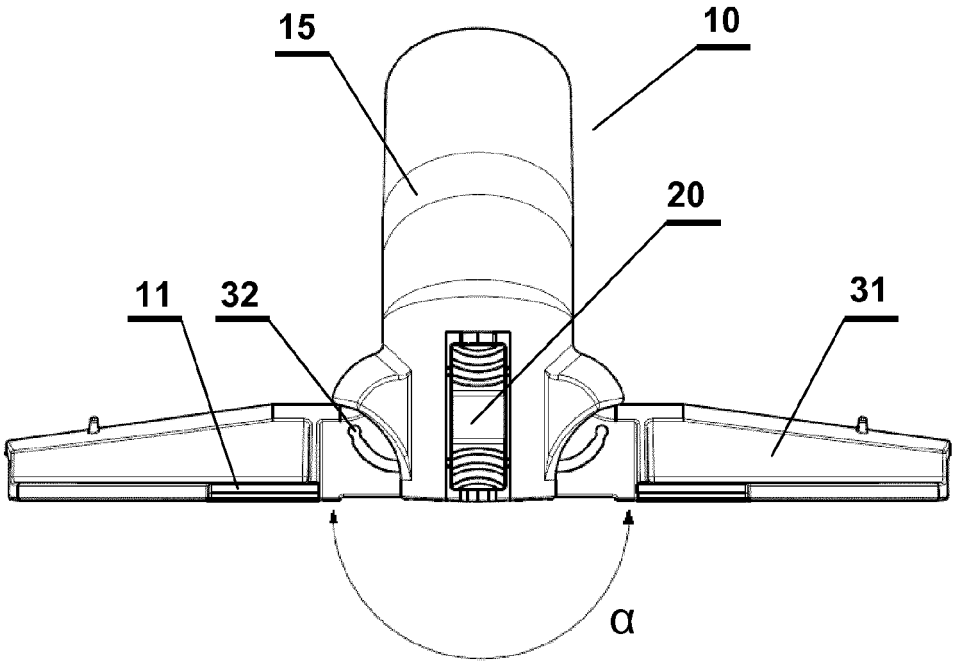


Fig. 5

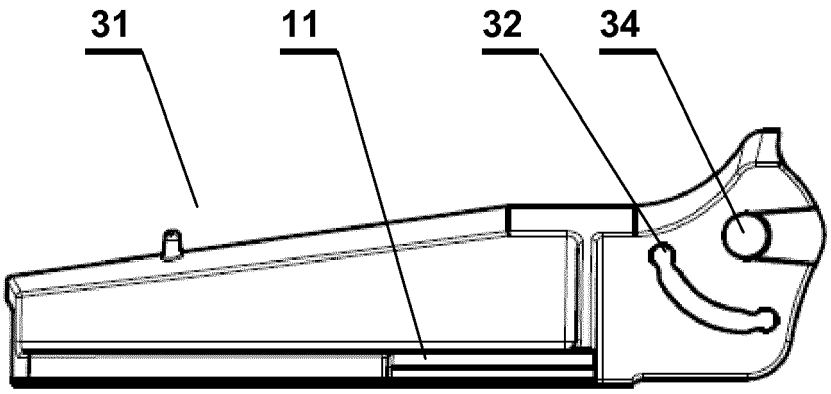


Fig. 6

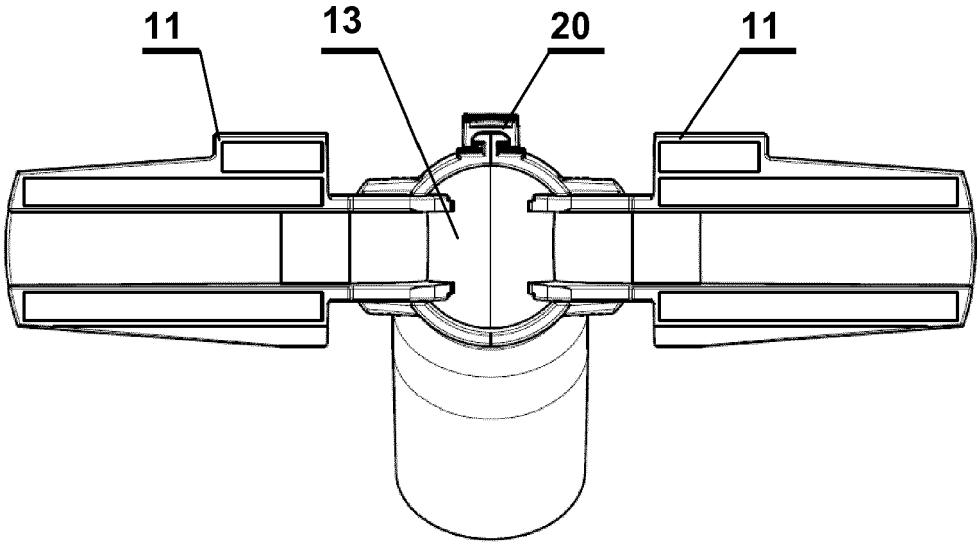
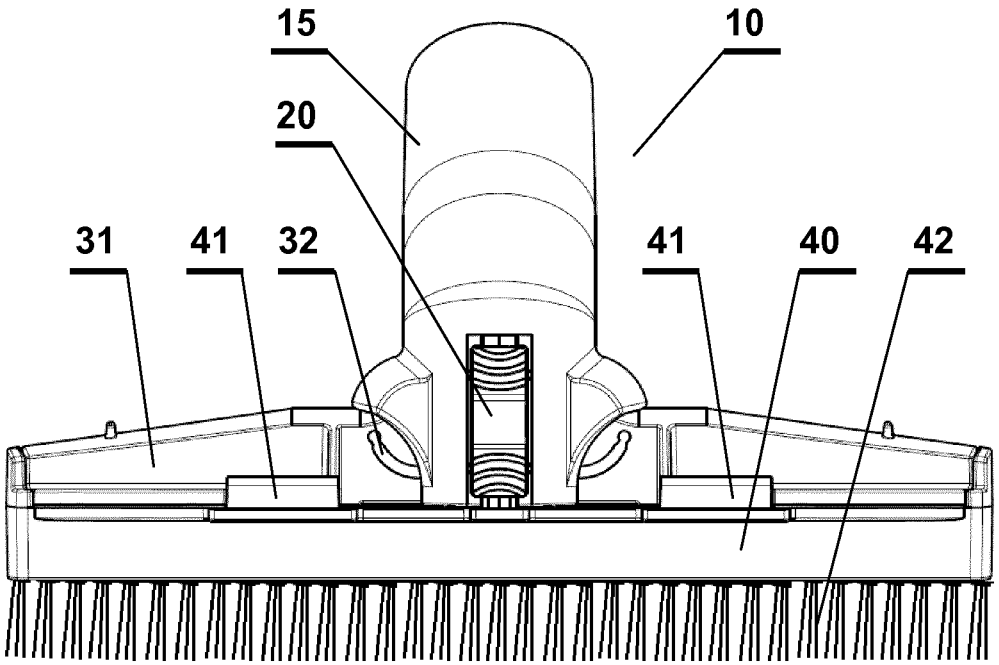


Fig. 7



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EUROPEAN SEARCH REPORT

Application Number
EP 17 17 9917

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	JP H11 113815 A (KATONO FUMITO) 27 April 1999 (1999-04-27) * abstract; figures *	1-6 7,9 8	INV. A47L9/02 A47L9/06
Y	JP 2001 212038 A (KURATA YUKA) 7 August 2001 (2001-08-07) * abstract *	7,9	
A	DE 199 12 451 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 21 September 2000 (2000-09-21) * column 2, line 8 - column 3, line 10 *	1-9	

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	14 December 2017	Eckenschwiller, A

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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14-12-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP H11113815 A	27-04-1999	NONE	
JP 2001212038 A	07-08-2001	NONE	
DE 19912451 A1	21-09-2000	DE 19912451 A1	21-09-2000
		FR 2790936 A1	22-09-2000

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5502870 A **[0002]**