

(19)



(11)

EP 3 313 251 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
02.10.2019 Bulletin 2019/40

(51) Int Cl.:
A47L 9/02 (2006.01) A47L 9/06 (2006.01)

(21) Application number: **15731050.9**

(86) International application number:
PCT/EP2015/064222

(22) Date of filing: **24.06.2015**

(87) International publication number:
WO 2016/206734 (29.12.2016 Gazette 2016/52)

(54) **VACUUM CLEANER NOZZLE AND VACUUM CLEANER COMPRISING A VACUUM CLEANER NOZZLE**

STAUBSAUGERSAUGDÜSE UND STAUBSAUGER MIT EINER SAUGDÜSE

BUSE D'ASPIRATEUR ET ASPIRATEUR COMPRENANT UNE BUSE

(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**

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(43) Date of publication of application:
02.05.2018 Bulletin 2018/18

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EP 3 313 251 B1

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Description

TECHNICAL FIELD

[0001] Embodiments herein relate to a vacuum cleaner nozzle for attachment to a vacuum cleaner. Embodiments herein further relate to a vacuum cleaner comprising the vacuum cleaner nozzle.

BACKGROUND

[0002] Vacuum cleaner nozzles are typically designed to be attachable to an end of a vacuum cleaner hose. The other end of the vacuum cleaner hose is attachable to a vacuum cleaner. The vacuum cleaner normally comprises a motor which is configured to build up a low pressure within the vacuum cleaner and due to the low pressure caused by the motor, air is drawn through the vacuum cleaner nozzle and the hose. In the vacuum cleaner the air passes one or more filters which filter the air from dust and debris. Some vacuum cleaners comprise a dust bag in which the dust and debris are collected or one or more cyclones separating the dust and debris from the air. Vacuum cleaners may also comprise a processor and/or controller which may affect e.g. flow related parameters and also several other components, such as a cord wheel, wheels etc.

[0003] When in use, some surfaces of the vacuum cleaner nozzle form a flow channel for the air. Such surfaces may be directed towards a floor which is to be cleaned, and/or may be facing an interior of the vacuum cleaner nozzle.

[0004] Today there is an aim to increase the efficiency of vacuum cleaners, i.e. to reduce the power or effect from the motor while keeping or increasing a dust pick up rate, i.e. the ability to clean. However, when the motor power is reduced other parameters may have to be adjusted in order to keep the suction efficiency and/or a dust pick up rate at a desired or acceptable level.

[0005] Document DE 19900968 C1 discloses a nozzle for a vacuum cleaner. The nozzle comprises sole with a suction inlet having front and rear edges. Fiber raising elements are arranged fore and aft of the suction inlet. The rear suction inlet edge has a recess forming a flow chamber, and a bridge between the recess and pocket holding the fiber raising elements.

[0006] It thus remain a need for a vacuum cleaner nozzle which is highly efficient and which provides for a high dust pick up rate also when the vacuum cleaner nozzle is arranged to cooperate with a vacuum cleaner with a relatively low power motor.

SUMMARY

[0007] An object is to provide a more efficient vacuum cleaner nozzle.

[0008] According to the invention, the object is achieved by a vacuum cleaner nozzle for attachment to

a vacuum cleaner according to claim 1.

[0009] Since the first ledge comprises a first protruding element which protrudes towards the first plane between the inner first rim surface edge and the outer first rim surface edge fibers and dust which are gathered in the vicinity of the first ledge surface can come loose more easily when the vacuum cleaner nozzle is moved along a surface to be cleaned.

[0010] According to some embodiments the first ledge is arranged offset from the first rim surface and comprises a first ledge surface to which a plush is attachable. With a first ledge arranged offset from the first rim surface a plush can be securely attached to the first ledge surface.

[0011] In some embodiments a plush is attached to the first ledge surface. Dust and debris which has been collected by the plush is released when the vacuum cleaner nozzle is moved forward and/or backwards along a rug or similar surface. The dust and debris will be released such that it can enter the flow channel end be collected by the vacuum cleaner. The protruding element may direct at least a part of the air flow, dust and debris into the flow channel which leads to the vacuum cleaner.

[0012] In addition, the protruding element will be able to browse carpet straws of a carpet to be cleaned when the first rim surface is moved along the carpet. The protruding element will thus repeatedly come into contact with carpet straws. During this browsing dust and debris in/on the carpet will be released and sucked up via the vacuum cleaner nozzle. The protruding element thus will act as an edge which "aggressively" can browse a carpet due to its shape and position.

[0013] According to some embodiments the first protruding element protrudes substantially to the first plane. Hereby the first protruding element very efficiently can browse carpet straws when the rim of the vacuum cleaner nozzle is moved along a carpet.

[0014] According to some embodiments the vacuum cleaner nozzle further comprises a second ledge offset from the second rim surface. The second ledge comprises a second protruding element which protrudes towards the second plane. The first protruding element is configured to interact with a surface to be cleaned when the vacuum cleaner nozzle is brought along a first direction, such as during a forward movement from a user. The second protruding element can be configured to interact with a surface to be cleaned when the vacuum cleaner nozzle is brought along a second direction, such as during a rearward movement towards a user. With both a first protruding element and a second protruding element a surface can be vacuum cleaned in a more efficient manner.

[0015] According to some embodiments the first rim surface comprises a first slot, and where a longitudinal direction of the first slot is substantially aligned with a longitudinal direction of the first protruding element. Since the first rim surface comprises the first slot, and where a longitudinal direction of the first slot is substantially aligned with a longitudinal direction of the first pro-

truding element, the first protruding element can interact with the surface to be cleaned in an efficient manner. The slot allows a rug or similar to bulge into the slot when the vacuum cleaner nozzle is moved along the rug. During the "bulging", the first and/or the second protruding element efficiently can browse through straws of the rug. In addition, the vacuum cleaner nozzle will be positioned closer to the carpet since a support surface between the vacuum cleaner nozzle and the carpet is decreased due to the slot.

[0016] According to some embodiments the first protruding element protrudes at least 1 mm, preferably at least 2 mm from the first ledge surface. Hereby dust and debris efficiently are loosened from a carpet and released in the flow channel.

[0017] According to some embodiments the first ledge surface is substantially parallel to the first plane. A plush may then securely be attached to the first ledge surface such that an outer surface of the plush is arranged substantially in parallel with the first plane. The plush may have fibers or straws directed towards the inlet of the vacuum cleaner nozzle. The first protruding element can then efficiently facilitate removal of dust and debris which has been collected by the plush as the vacuum cleaner nozzle is moved along a surface to be clean.

[0018] According to some embodiments the first ledge surface is arranged between a first portion of the first slot and a second portion of the first slot. The first ledge surface can have a curvature which, at least partly, coincides with a curvature of the first and second slot surfaces.

[0019] According to some embodiments the first rim surface is arrangeable to be in contact with a surface to be cleaned in a first vacuum cleaning movement direction and the second rim surface is arrangeable to be in contact with a surface to be cleaned in a second vacuum cleaning movement direction, opposite the first vacuum cleaning direction. The forward direction may correspond to a movement when the vacuum cleaner nozzle is moved along a surface to be cleaned away from a user which operates the vacuum cleaner nozzle when it is attached to a vacuum cleaner hose in a known manner.

[0020] An angle between the first plane and the second plane is blunt and may be e.g. in the range of 120-170 degrees. The vacuum cleaner nozzle may comprise a pivot axis such that a part comprising the first and second rim surfaces are pivotable relatively a part that is attachable to a vacuum cleaner hose.

[0021] According to some embodiments the first protruding element is arranged to browse carpet straws of a carpet to be cleaned when the first rim surface is moved along the carpet to be cleaned in a first vacuum cleaning movement direction.

[0022] Embodiments herein also aim to provide an efficient vacuum cleaner. According to some embodiments this is provided by a vacuum cleaner comprising a vacuum cleaner nozzle according to embodiments described herein. With a vacuum cleaner nozzle according to embodiments described herein the vacuum cleaner is

very efficient also with a relatively low powered motor, such as a motor with less than 1000W.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The various aspects of embodiments herein, including its particular features and advantages, will be readily understood from the following detailed description and the accompanying drawings, in which:

Fig. 1 illustrates a perspective view of a vacuum cleaner nozzle according to some embodiments,

Fig. 2 illustrates the Fig. 1 vacuum cleaner nozzle from another angle,

Fig. 3 illustrates the vacuum cleaner nozzle in Fig. 1 and 2 from below,

Fig. 4 illustrates a cross section of the vacuum cleaner along the cut D-D in Fig. 3,

Fig. 5 illustrates a close-up of the Fig. 4 cross section,

Fig. 6 illustrates a vacuum cleaner nozzle according to some other embodiments,

Fig. 7 illustrates a vacuum cleaner comprising a vacuum cleaner nozzle,

Fig. 8 illustrates dust pick up rates for a prior art vacuum cleaner nozzle,

Fig. 9 illustrates dust pick up rates for vacuum cleaner nozzles according to embodiments herein.

DETAILED DESCRIPTION

[0024] Embodiments herein will now be described more fully with reference to the accompanying drawings, in which embodiments are shown. Well-known functions or constructions will not necessarily be described in detail for brevity and/or clarity.

[0025] Fig. 1 illustrates a vacuum cleaner nozzle 1 according to some embodiments. In Fig. 1 the vacuum cleaner nozzle 1 is illustrated in perspective from underneath, such that parts and surfaces normally arranged towards a surface to be cleaned is depicted.

[0026] The vacuum cleaner nozzle 1 may be formed as a homogenous body, e.g. made of plastics or metal. Alternatively, the vacuum cleaner nozzle 1 may be formed by two or more different pieces which together form the vacuum cleaner nozzle 1. The vacuum cleaner nozzle 1 may be formed e.g. by molding.

[0027] The vacuum cleaner nozzle 1 comprises a rim 3 with a first rim surface 5 extending between an inner first rim surface edge 5a and an outer first rim surface edge 5b in a first plane 7. The vacuum cleaner nozzle 1

also comprises a second rim surface **9** which extends between an inner second rim surface edge **9a** and an outer second rim surface edge **9b** in a second plane **11**. The first rim surface **5** and the second rim surface **9** is arrangable to face a surface to be cleaned, i.e. the purpose with the first rim surface **5** and the second rim surface **9** is to be in contact with a floor or similar when the vacuum cleaner nozzle is used during a normal vacuum cleaning operation.

[0028] The first plane **7** intersects the second plane **11** in a blunt angle α . The angle α may depend on the overall design of the vacuum cleaner nozzle **1** and may e.g. be in the range of 120-170 degrees.

[0029] The first rim surface **5** in the first plane **7** is arranged to be in contact with a surface to be cleaned in a first vacuum cleaning movement direction, such as away from a user and/or vacuum cleaner hose. The second rim surface **9** in the second plane **11** is arranged to be in contact with a surface to be cleaned in a second vacuum cleaning movement direction, opposite the first vacuum cleaning movement direction. The second vacuum cleaning movement direction may be directed towards a user and/or vacuum cleaner hose.

[0030] The vacuum cleaner nozzle **1** comprises a first ledge **13**. The ledge **13** may also be referred to as an offset portion, a central portion or a plush portion. The ledge **13** is arranged offset from the first rim surface **5** and comprises a first ledge surface **13a** to which a plush **14** is attachable. A part of the plush **14** is schematically illustrated in Fig. 1. The plush **14** is a piece of fabric or similar with a plurality of plush fibers **14b** extending away from the first ledge surface **13a**.

[0031] The first ledge **13** comprises a first protruding element **15** which protrudes towards the first plane **7** between the inner first rim surface edge **5a** and the outer first rim surface edge **5b**. The plush fibers **14a** may be angled such that they are directed towards the first protruding element **15**. The first protruding element **15** may also be referred to as an edge or projection.

[0032] In some embodiments the first protruding element **15** extends almost to the first plane **7** and in some other embodiments the first protruding element **15** extends to the first plane **7**. In some other embodiments the first protruding element **15** intersects the first plane **7**.

[0033] In the embodiment illustrated in Fig. 1 the first ledge **13** is illustrated arranged at the first rim surface **5**. In other embodiments the first ledge **13** is instead arranged at the second rim surface **9**.

[0034] The embodiment illustrated in Fig. 1 further comprises a second ledge **17** offset from the second rim surface **9**. The second ledge **17** comprises a second protruding element **19** which protrudes towards the second plane **11**. The second ledge **17** also comprises a second ledge surface **17a**. Also the second ledge surface **17a** may comprise a plush with plush fibers. The plush fibers at the second ledge surface **17** may be inclined towards the second protruding element **19**. Also a first slot **25** and a second slot **27** are illustrated. The slots **25**, **27** are fur-

ther discussed in conjunction with Fig. 2.

[0035] Thus, the vacuum cleaner nozzle **1** may comprise a ledge at the first rim surface **5** or at the second rim surface **9**. Alternatively the vacuum cleaner nozzle **1** can comprise two ledges, a first ledge **13** at the first rim surface **5** and a second ledge **17** at the second rim surface **9**.

[0036] As illustrated in Fig. 1, the protruding element **15** may be arranged locally in a central portion of the vacuum cleaner nozzle **1**. The protruding element **15** is distinguished / offset from the inner first rim surface edge **5a**. Some browsing may occur also at the inner first rim surface edge **5a** but generally not as much as at the first protruding element **15**.

[0037] A width of the ledge and plush **14** may be selected freely, e.g. depending on application. A vacuum cleaner nozzle **1** arranged to be used to remove hair from pets may have a wider ledge with a wider plush **14** since the plush **14** is efficient for picking up fibers and hairs in one vacuum cleaner nozzle direction and releasing them in an opposite direction.

[0038] In Fig. 1 an attachment portion **21** is illustrated. The vacuum cleaner nozzle **1** can be attached to a vacuum cleaner hose via the attachment portion **21**. Alternatively the vacuum cleaner nozzle **1** may be attached to a second vacuum cleaner nozzle portion (not illustrated) via the attachment portion **21**. The second vacuum cleaner nozzle portion may in turn be attached to a vacuum cleaner hose. Such second vacuum cleaner nozzle portion may comprise wheels which allow the vacuum cleaner nozzle **1** and second vacuum cleaner nozzle portion to be rolled along a surface to be cleaned. In some embodiments the vacuum cleaner nozzle **1** comprises also the second vacuum cleaner nozzle portion. Such second vacuum cleaner nozzle portion may also comprise a hinge or similar which allow the vacuum cleaner nozzle **1** to tilt slightly. Hereby the first protruding element **15** can be in contact with a carpet in a forward direction and the second protruding element **19** can be in contact with a carpet in a rearward direction. This is further illustrated in conjunction with Fig. 5.

[0039] Fig. 2 illustrates the Fig. 1 embodiment from another perspective. The vacuum cleaner nozzle **1** comprises the first ledge **13** with the first ledge surface **13a** and the second ledge **17** with the second ledge surface **17a**. The first ledge **13** comprises the first protruding element **15** and the second ledge **17** comprises the second protruding element **19**.

[0040] When the vacuum cleaner nozzle **1** is in use, an air flow is directed by the vacuum cleaner nozzle **1**. Air is passing **A** the first **5** and second **9** rim surfaces and the first **13** and second **17** ledges. The air is flowing **B** through a nozzle interior **23** and exits **C** the vacuum cleaner nozzle **1** via the attachment portion **21**. The air is then led to a vacuum cleaner via a hose attached to the attachment portion **21**.

[0041] In the embodiment illustrated in Fig. 2 the first rim surface **5** comprises the first slot **25**. The second rim

surface 9 comprises the second slot 27. The first 25 and second 27 slots prevent that the vacuum cleaner nozzle 1 sticks too much to a surface to be cleaned. In other words, a suction force between the surface to be cleaned and the rim surfaces 5,9 may be changes and/or decreased by the slot(s). A large slot may make it difficult for a user to move the vacuum cleaner nozzle 1 along a surface since the vacuum cleaner nozzle 1 may stick too much to the surface. With one or more slots 25, 27, the support surface between the vacuum cleaner nozzle 1 and the surface is decreased. The vacuum cleaner nozzle may hereby be positioned lower, e.g. deeper into a carpet. This can increase the suction force.

[0042] In this illustrated embodiment a longitudinal direction of the first slot 25 is substantially aligned with a longitudinal direction of the first protruding element 15. A longitudinal direction of the second slot 27 is substantially aligned with a longitudinal direction of the second protruding element 19.

[0043] In some embodiments the vacuum cleaner nozzle 1 is arranged without any slot. In Fig. 2 also two short side portions 28 are illustrated. The rim surfaces 5, 9 and the side portions 28 together form an inlet of the vacuum cleaner nozzle 1.

[0044] Fig. 3 illustrates the vacuum cleaner nozzle 1 from below. As in Fig. 1 and 2 the vacuum cleaner nozzle 1 comprises the first ledge 13 with the first ledge surface 13a and the second ledge 17 with the second ledge surface 17a. The first ledge 13 comprises the first protruding element 15 and the second ledge 17 comprises the second protruding element 19. In Fig. 3 also a cross section D-D is illustrated.

[0045] Fig. 4 illustrates the cross section D-D of the vacuum cleaner nozzle 1 illustrated in Fig. 3. Fig. 5 illustrates a close-up of the first protruding element 15 and the second protruding element 19. In fig 5 also the blunt angle α between the first plane 7 and the second plane 11 is illustrated.

[0046] In Fig. 5 a forward direction **F** is illustrated. The forward direction **F** corresponds to a movement when the vacuum cleaner nozzle 1 is moved along a surface to be cleaned away from a user which operates the vacuum cleaner nozzle 1 when it is attached to a vacuum cleaner hose in a known manner. When the vacuum cleaner nozzle 1 travels in the forward direction **F** the first protruding element 15 will be pressed towards the surface such that it can browse a carpet or similar. Hereby dust easily comes loose and can enter the nozzle interior 23 due to the low pressure built up by the vacuum cleaner motor.

[0047] When the vacuum cleaner nozzle 1 travels in the illustrated rearward direction **R** the second protruding element 19 will be pressed towards the surface such that it can browse a carpet. The vacuum cleaner nozzle 1 may in the rearward direction be slightly tilted relatively the forward direction, e.g. due to a hinge or similar. The forward direction **F** and the rearward direction **R** may be opposite to each other or may be arranged with a blunt

angle in between, such as the blunt angle α . As illustrated in e.g. Fig. 2 and Fig. 5 the short side portions 28 may be chamfered relatively the first plane 7 and the second plane 11. The forward direction **F** and the rearward direction **R** may be directed about 180 degrees from each other in the horizontal plane.

[0048] When the vacuum cleaner nozzle 1 is brought along a carpet in the first direction **F** the first protruding element 15 effectively will come in contact with straws of the carpet such that dust will be released and sucked up. An angle between the first plane 7 and a protruding direction of the first protruding element 15 can be 60-120 degrees, such as about 90 degrees.

[0049] In Fig. 6, a vacuum cleaner nozzle 1 according to an alternative embodiment is illustrated. In this embodiment the first ledge surface 13a is arranged between a first portion 25a of the first slot 25 and a second portion 25b of the first slot 25. A cross section curvature of the first ledge surface 13a may partly correspond to a curvature of the first slot 25. Correspondingly, the second ledge surface 17a is arranged between a first portion 27a of the second slot 27 and a second portion 27b of the second slot 27. In some embodiments the vacuum cleaner nozzle is arranged without any push attached to the ledge surfaces. In some embodiments the first ledge surface 13a can be arranged substantially in the same plane as the first rim surface 5, i.e. the first rim surface 5 and the first ledge surface 13a can substantially coincide. The second ledge surface 17a can substantially coincide with the second rim surface 9.

[0050] As illustrated, a longitudinal direction of the first slot 25 may be substantially aligned with a longitudinal direction of the first protruding element 15. A longitudinal direction of the second slot 27 may be substantially aligned with a longitudinal direction of the second protruding element 19.

[0051] Fig. 7 illustrates a vacuum cleaner 50 with a vacuum cleaner nozzle 1 according to embodiments described herein attached to a vacuum cleaner hose 51. The vacuum cleaner 50 may be a conventional vacuum cleaner or a vacuum cleaner with a relatively low powered motor, such as a motor with an effect less than 1000W.

[0052] Fig. 8 illustrates test results with dust pick up rates for different sections of a vacuum cleaner nozzle. Dust pick up is the cleaning performance and it can be measured e.g. on hard floor and on carpets. In some countries vacuum cleaners have to be tested and the dust pick up has to be stated in a standardized manner on the vacuum cleaner package when the vacuum cleaner is sold. Dust pick up may for example be rated on a scale, where a better rated cleaner is proven to clean e.g. ≥ 91 % of the dust from a rug or carpet while a lower rated cleaner is able to clean e.g. ≥ 71 % of the dust from a carpet.

[0053] In Fig. 8 test result for a state of the art vacuum cleaner nozzle is illustrated. The height of each pile corresponds to the dust pick up rate for the corresponding vacuum cleaner nozzle section. A higher pile means a

higher dust pick up rate. In Fig. 8 and 9 a high pile corresponds to a dust pick up rate of about 85%. A low high pile corresponds to a dust pick up rate of about 75%.

[0054] As illustrated, the dust pick up is relatively poor for a middle section of the prior art nozzle in Fig. 8. In Fig. 9 the dust pick up for a vacuum cleaner nozzle 1 according to embodiments herein is illustrated. The protruding element(s) at a central portion of the rim has proven to increase the dust pick up rate drastically. In some embodiments the dust pick up rate for a middle portion has increased with 5-10% compared to prior art vacuum cleaner nozzles.

Claims

1. A vacuum cleaner nozzle (1) for attachment to a vacuum cleaner (50), the vacuum cleaner nozzle (1) comprising;

- a rim (3), with a first rim surface (5) extending between an inner first rim surface edge (5a) and configured to interact with a surface to be cleaned when the vacuum cleaner nozzle is brought along a forward movement, and an outer first rim surface edge (5b) in a first plane (7) and a second rim surface (9) extending between an inner second rim surface edge (9a) and an outer second rim surface edge (9b) in a second plane (11), the first rim surface (5) and the second rim surface (9) being arrangeable to face a surface to be cleaned and the first plane (7) intersecting the second plane (11) in a blunt angle (α),

- a first ledge (13), wherein the first ledge (13) comprises a first protruding element (15) **characterized in that** the first protruding element (15) protrudes towards the first plane (7) between the inner first rim surface edge (5a) and the outer first rim surface edge (5b), wherein the first protruding element is configured to interact with the surface to be cleaned when the vacuum cleaner nozzle is brought along said forward movement

2. The vacuum cleaner nozzle (1) according to claim 1 **wherein** the first ledge (13) is arranged offset from the first rim surface (5) and comprises a first ledge surface (13a) to which a plush (14) is attachable.
3. The vacuum cleaner nozzle (1) according to claim 1 or 2 **wherein** the first protruding element (15) protrudes substantially to the first plane (7).
4. The vacuum cleaner nozzle (1) according to any one of the preceding claims **wherein** it further comprises a second ledge (17) offset from the second rim surface (9), the second ledge (17) comprising a second

protruding element (19) which protrudes towards the second plane (11).

5. The vacuum cleaner nozzle (1) according to any one of the preceding claims **wherein** the first rim surface (5) comprises a first slot (25), and where a longitudinal direction of the first slot (25) is substantially aligned with a longitudinal direction of the first protruding element (15).
6. The vacuum cleaner nozzle (1) according to any one of the preceding claims, **wherein** the first protruding element (15) protrudes at least 1 mm from the first ledge surface (13a).
7. The vacuum cleaner nozzle (1) according to any one of the preceding claims, **wherein** the first ledge surface (13a) is substantially parallel to the first plane (7).
8. The vacuum cleaner nozzle (1) according to any one of claims 1-6, **wherein** the first ledge surface (13a) is arranged between a first portion (25a) of the first slot (25) and a second portion (25b) of the first slot (25).
9. The vacuum cleaner nozzle (1) according to any one of the preceding claims, **wherein** the first rim surface (5) is arrangeable to be in contact with a surface to be cleaned in a first vacuum cleaning movement direction (F) and the second rim surface (9) is arrangeable to be in contact with a surface to be cleaned in a second vacuum cleaning movement direction (R), opposite the first vacuum cleaning direction (F).
10. The vacuum cleaner nozzle (1) according to any one of the preceding claims, **wherein** the first protruding element (15) is arranged to browse carpet straws of a carpet to be cleaned when the first rim surface (5) is moved along the carpet to be cleaned in a first vacuum cleaning movement direction (F).
11. A vacuum cleaner (50) **characterized in that** the vacuum cleaner (50) comprises a vacuum cleaner nozzle (1) according to any one of the preceding claims.

Patentansprüche

1. Staubsaugerdüse (1) zur Befestigung an einem Staubsauger (50), wobei die Staubsaugerdüse (1) Folgendes umfasst:

- einen Rand (3) mit einer ersten Randoberfläche (5), die sich zwischen einer inneren ersten Randoberflächenkante (5a) und konfiguriert zum Zusammenwirken mit einer zu reinigenden

Oberfläche, wenn die Staubsaugerdüse in einer Vorwärtsbewegung bewegt wird, und einer äußeren ersten Randoberflächenkante (5b) in einer ersten Ebene (7) erstreckt, und einer zweiten Randoberfläche (9), die sich zwischen einer inneren zweiten Randoberflächenkante (9a) und einer äußeren zweiten Randoberflächenkante (9b) in einer zweiten Ebene (11) erstreckt, wobei die erste Randoberfläche (5) und die zweite Randoberfläche (9) so angeordnet werden können, dass sie zu einer zu reinigenden Oberfläche weisen und die erste Ebene (7) die zweite Ebene (11) in einem stumpfen Winkel (α) schneidet,

- einen ersten Ansatz (13),

wobei der erste Ansatz (13) ein erstes vorstehendes Element (15) umfasst,

dadurch gekennzeichnet, dass das erste vorstehende Element (15) zu der ersten Ebene (7) zwischen der inneren ersten Randoberflächenkante (5a) und der äußeren ersten Randoberflächenkante (5b) vorsteht, wobei das erste vorstehende Element dazu konfiguriert ist, mit der zu reinigenden Oberfläche zusammenzuwirken, wenn die Staubsaugerdüse in der Vorwärtsbewegung bewegt wird.

2. Staubsaugerdüse (1) nach Anspruch 1, wobei der erste Ansatz (13) von der ersten Randoberfläche (5) versetzt angeordnet ist und eine erste Ansatzoberfläche (13a) umfasst, an der ein Plüsch (14) anbringbar ist.
3. Staubsaugerdüse (1) nach Anspruch 1 oder 2, wobei das erste vorstehende Element (15) im Wesentlichen in die erste Ebene (7) vorsteht.
4. Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche, wobei sie ferner einen zweiten Ansatz (17) umfasst, der von der zweiten Randoberfläche (9) versetzt ist, wobei der zweite Ansatz (17) ein zweites vorstehendes Element (19) umfasst, das in Richtung der zweiten Ebene (11) vorsteht.
5. Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche, wobei die erste Randoberfläche (5) eine erste Nut (25) umfasst, und wobei eine Längsrichtung der ersten Nut (25) im Wesentlichen auf eine Längsrichtung des ersten vorstehenden Elements (15) ausgerichtet ist.
6. Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche, wobei das erste vorstehende Element (15) mindestens 1 mm von der ersten Ansatzoberfläche (13a) vorsteht.
7. Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche, wobei die erste Ansatzoberfläche

(13a) im Wesentlichen parallel zu der ersten Ebene (7) verläuft.

8. Staubsaugerdüse (1) nach einem der Ansprüche 1-6, wobei die erste Ansatzoberfläche (13a) zwischen einer ersten Partie (25a) der ersten Nut (25) und einer zweiten Partie (25b) der ersten Nut (25) angeordnet ist.
9. Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche, wobei die erste Randoberfläche (5) so anordenbar ist, dass sie im Kontakt mit einer in einer ersten Staubsaugerbewegungsrichtung (F) zu reinigenden Oberfläche ist, und die zweite Randoberfläche (9) so anordenbar ist, dass sie im Kontakt mit einer in einer zweiten Staubsaugerbewegungsrichtung (R) zu reinigenden Oberfläche ist, der ersten Staubsaugerrichtung (F) entgegengesetzt.
10. Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche, wobei das erste vorstehende Element (15) angeordnet ist, um Teppichstreifen eines zu reinigenden Teppichs zu überstreichen, wenn die erste Randoberfläche (5) entlang des zu reinigenden Teppichs in einer ersten Staubsaugerbewegungsrichtung (F) bewegt wird.
11. Staubsauger (50), **dadurch gekennzeichnet, dass** der Staubsauger (50) eine Staubsaugerdüse (1) nach einem der vorangehenden Ansprüche umfasst.

Revendications

1. Tête aspirante (1) destinée à être fixée à un aspirateur (50), la tête aspirante (1) comprenant:
 - un rebord (3) ayant une première surface de rebord (5) s'étendant entre un bord interne de première surface de rebord (5a) et configuré pour interagir avec une surface à nettoyer lorsque la tête aspirante est amenée le long d'un mouvement vers l'avant, et un bord externe de première surface de rebord (5b) dans un premier plan (7) et une seconde surface de rebord (9) s'étendant entre un bord interne de seconde surface de rebord (9a) et un bord externe de seconde surface de rebord (9b) dans un second plan (11), la première surface de rebord (5) et la seconde surface de rebord (9) pouvant être agencées de manière à faire face à une surface à nettoyer et le premier plan (7) coupant le second plan (11) selon un angle obtus (α),
 - une première saillie (13),

la première saillie (13) comprenant un premier élément saillant (15) **caractérisé en ce que** le premier élément saillant (15) fait saillie vers le premier plan

- (7) entre le bord interne de première surface de rebord (5a) et le bord externe de première surface de rebord (5b), le premier élément saillant étant configuré pour interagir avec la surface à nettoyer lorsque la tête aspirante est amenée le long dudit mouvement vers l'avant.
2. Tête aspirante (1) selon la revendication 1, dans laquelle la première saillie (13) est disposée décalée par rapport à la première surface de rebord (5) et comprend une première surface de saillie (13a) à laquelle une peluche (14) peut être fixée. 5
 3. Tête aspirante (1) selon la revendication 1 ou 2, dans laquelle le premier élément saillant (15) fait saillie sensiblement vers le premier plan (7). 10
 4. Tête aspirante (1) selon l'une quelconque des revendications précédentes, dans laquelle elle comprend en outre une seconde saillie (17) décalée par rapport à la seconde surface de rebord (9), la seconde saillie (17) comprenant un second élément saillant (19) qui fait saillit vers le second plan (11). 20
 5. Tête aspirante (1) selon l'une quelconque des revendications précédentes, dans laquelle la première surface de rebord (5) comprend une première fente (25), et dans laquelle une direction longitudinale de la première fente (25) est sensiblement alignée avec une direction longitudinale du premier élément saillant (15). 25 30
 6. Tête aspirante (1) selon l'une quelconque des revendications précédentes, dans laquelle le premier élément saillant (15) fait saillie d'au moins 1 mm de la première surface de saillie (13a). 35
 7. Tête aspirante (1) selon l'une quelconque des revendications précédentes, dans laquelle la première surface de saillie (13a) est sensiblement parallèle au premier plan (7). 40
 8. Tête aspirante (1) selon l'une quelconque des revendications 1 à 6, dans laquelle la première surface de saillie (13a) est disposée entre une première partie (25a) de la première fente (25) et une seconde partie (25b) de la première fente (25). 45
 9. Tête aspirante (1) selon l'une quelconque des revendications précédentes, dans laquelle la première surface de rebord (5) peut être disposée pour être en contact avec une surface à nettoyer dans une première direction de mouvement de nettoyage par aspiration (F) et la seconde surface de rebord (9) peut être disposée pour être en contact avec une surface à nettoyer dans une seconde direction de mouvement de nettoyage par aspiration (R), opposée à la première direction de nettoyage par aspira- 50 55

tion (F).

10. Tête aspirante (1) selon l'une quelconque des revendications précédentes, dans laquelle le premier élément saillant (15) est agencé pour parcourir les pailles d'un tapis à nettoyer lorsque la première surface de rebord (5) est déplacée le long du tapis à nettoyer dans une première direction de mouvement de nettoyage par aspiration (F).
11. Aspirateur (50) **caractérisé en ce que** l'aspirateur (50) comprend une tête aspirante (1) selon l'une quelconque des revendications précédentes.

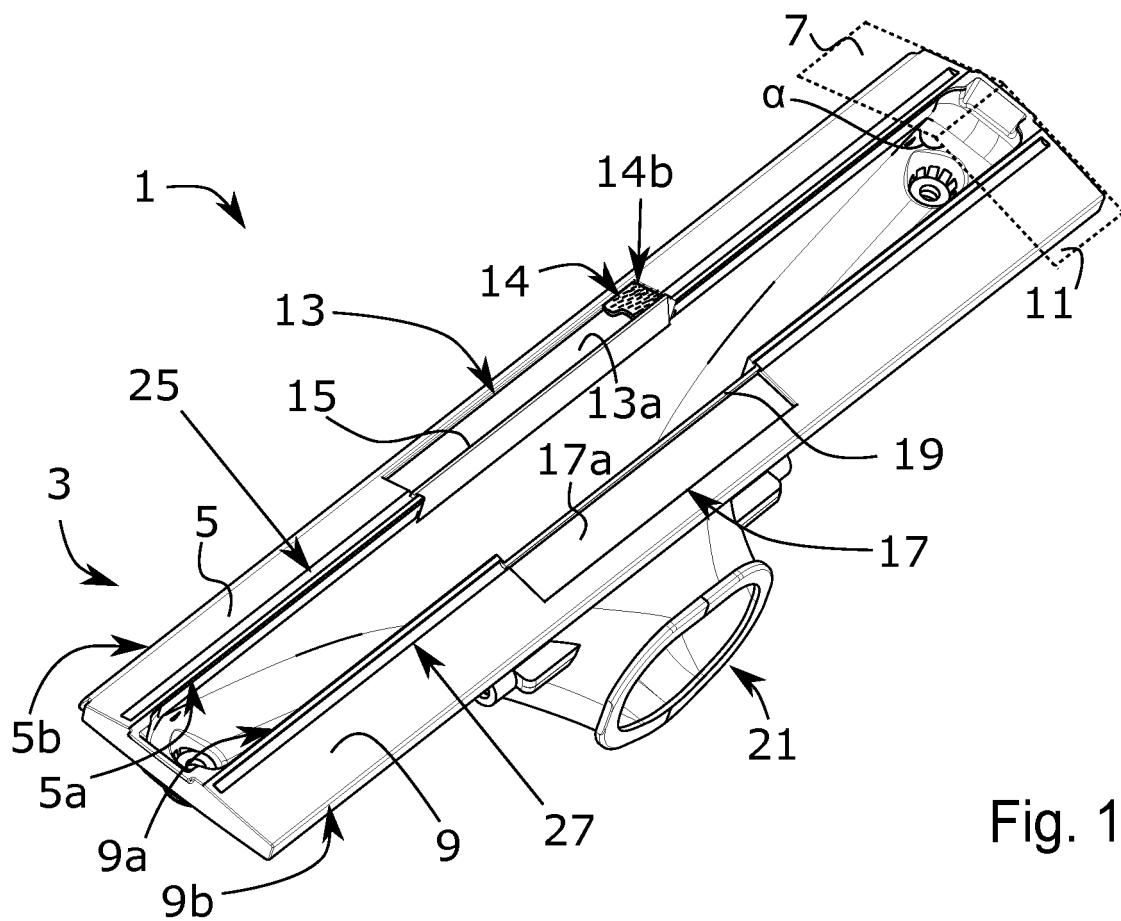


Fig. 1

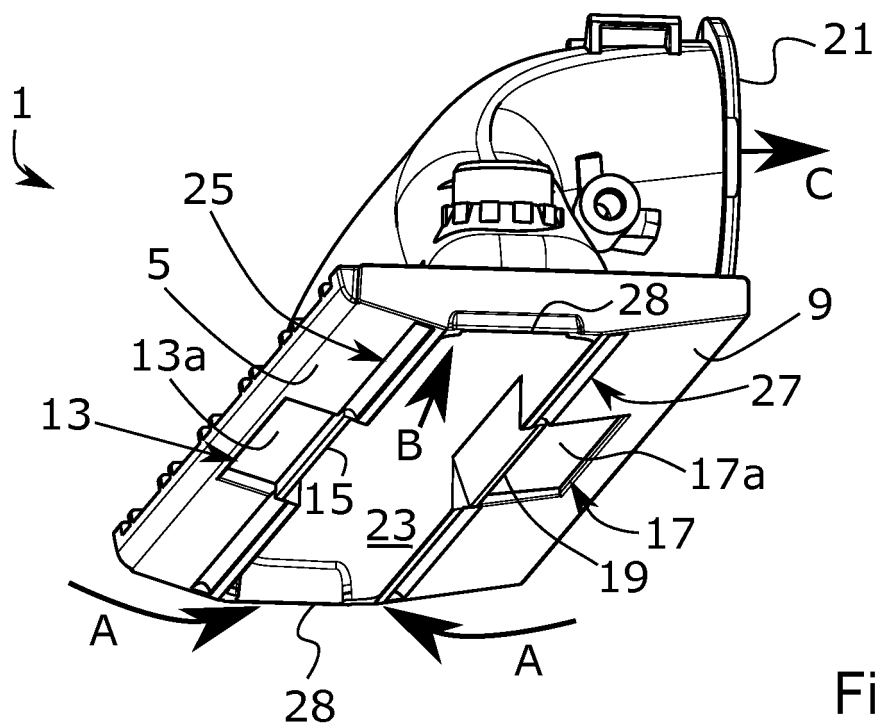
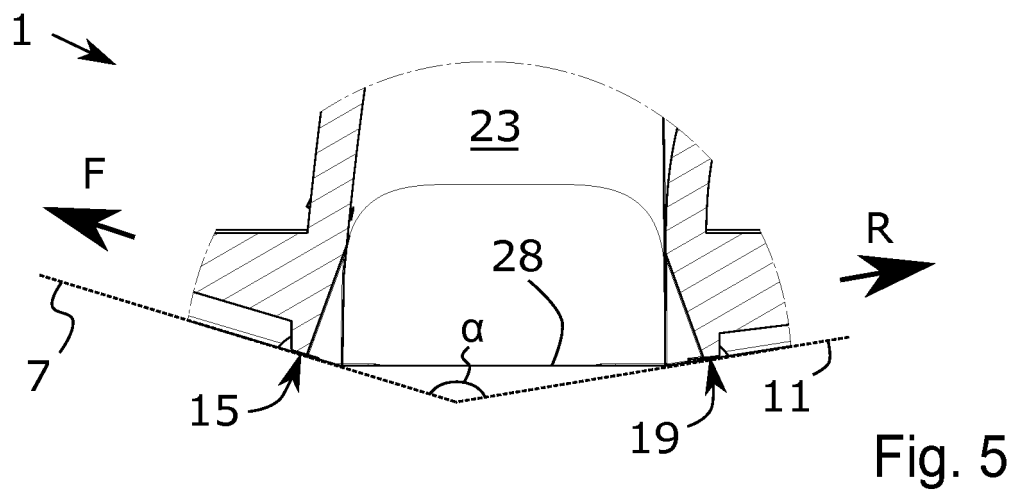
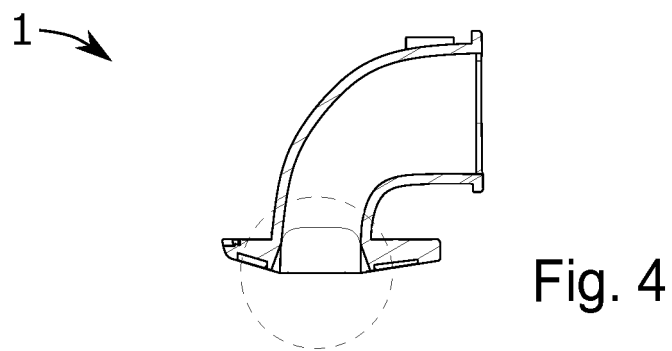
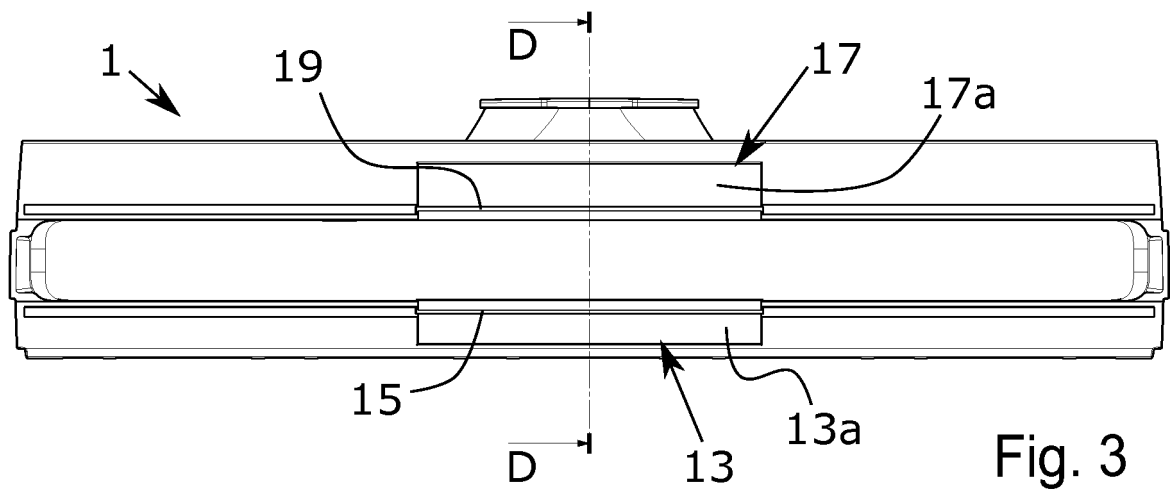


Fig. 2



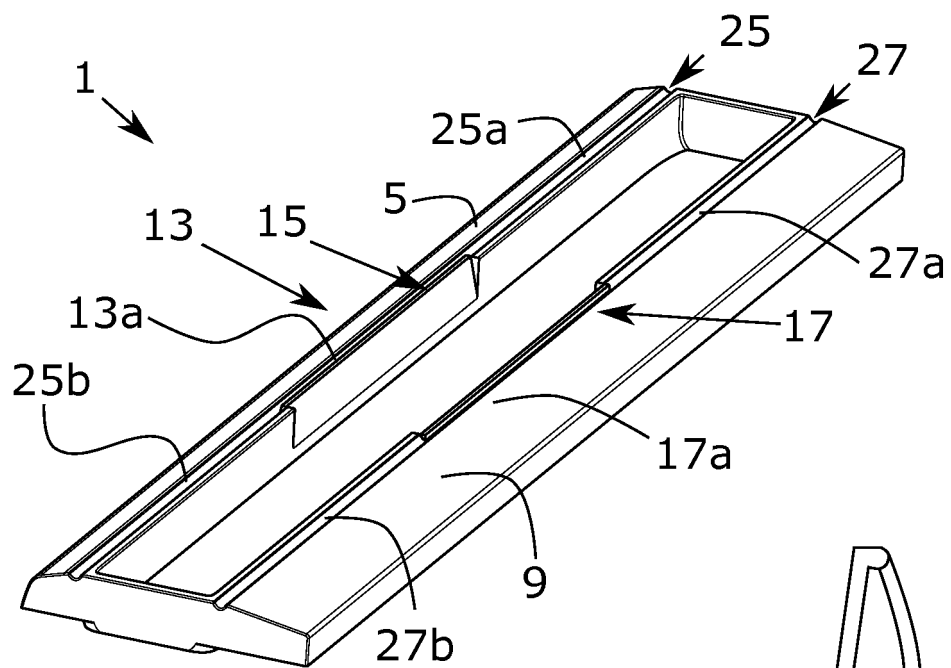


Fig. 6

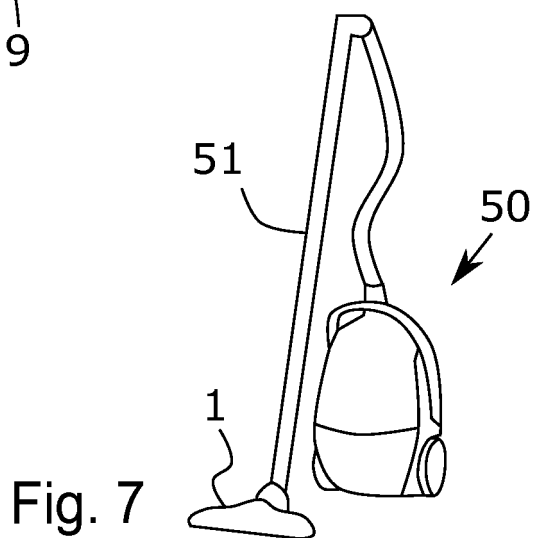


Fig. 7

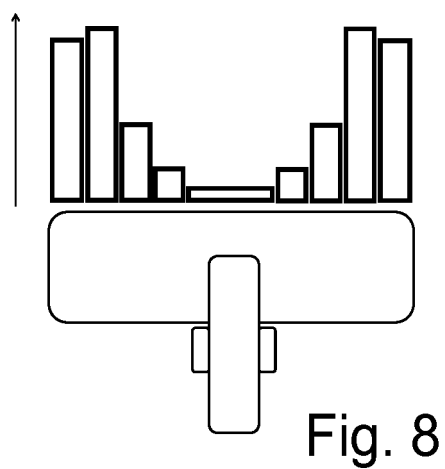


Fig. 8

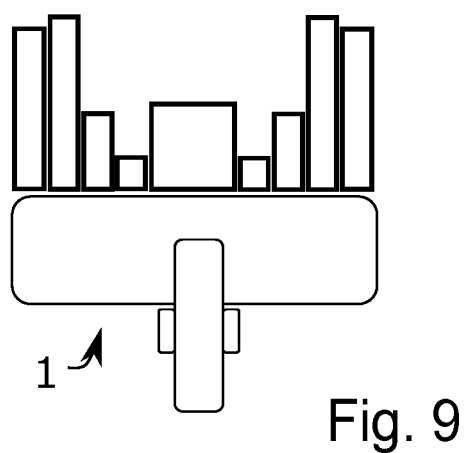


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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