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- (54) **Padlótisztító berendezés, elsősorban háztartási használatra**

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(54) **FLOOR CLEANING MACHINE, PARTICULARLY FOR HOUSEHOLD USE**

BODENREINIGUNGSMASCHINE, BESONDERS FÜR DEN HAUSHALTSGEBRAUCH

MACHINE DE NETTOYAGE DE SOL, NOTAMMENT À USAGE DOMESTIQUE

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Description

[0001] The present invention relates to a floor cleaning machine, particularly for household use.

[0002] Floor cleaning machines are known which are provided with a box-like containment body that accommodates a cylindrical brush provided with a horizontal axis, which is arranged substantially transversely to the advancement direction of the machine and is actuated rotationally about its axis by motor means associated with the machine.

[0003] The document EP 1 639 932 A2 describes a floor cleaning machine according to the preamble of claim 1.

[0004] In particular, the brush is arranged in an adapted compartment having a corresponding shape, which has, at one end, an access opening in order to allow the axial extraction of the brush from the box-like containment body.

[0005] The access opening of the brush accommodation compartment can be closed by means of a closure door, which has a rim that is capable of engaging by interlocking the rim of the open end of the compartment.

[0006] With current machines it is rather difficult for the user to remove the closure door from the access opening of the compartment, since a certain strength is required to disengage the rim of the closure door from the rim of the access opening.

[0007] The aim of the present invention is to solve this drawback, by providing a floor cleaning machine, particularly for household use, that allows easy removal of the closure door of the brush accommodation compartment.

[0008] Within this aim, an object of the invention is to provide a floor cleaning machine, particularly for household use, that is practical to use and has an extremely simple structure.

[0009] This aim and these and other objects that will become better apparent hereinafter are achieved by the floor cleaning machine, particularly for household use, according to the invention, as defined in claim 1.

[0010] Further characteristics and advantages will become better apparent from the description of a preferred but not exclusive embodiment of the floor cleaning machine, particularly for household use, according to the invention, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the machine according to the invention;

Figure 2 is a perspective view of the machine according to the invention with an upper cover in the raised open condition;

Figure 3 is a perspective view of the machine according to the invention, with the upper cover in the open condition and with the closure door of the brush accommodation compartment shown in the removed condition;

Figure 4 is a perspective view of the extraction of the

brush from its accommodation compartment;

Figure 5 is a perspective view of a detail of the brush; Figure 6 is a perspective view of the closure door of the brush accommodation compartment;

Figure 7 is a sectional view of the machine according to the invention, taken along the axis of the brush, with parts omitted for the sake of simplicity.

[0011] With reference to the figures, the machine for cleaning floors, particularly for household use, according to the invention, designated generally by the reference numeral 1, comprises a boxlike body 2, which defines an accommodation compartment 3 for a cylindrical brush 4 that has a horizontal axis.

[0012] Conveniently, the accommodation compartment 3 is contoured so as to correspond substantially to the brush 4 and in particular is closed in an upward region by a delimiting wall 5 shaped like a cylindrical portion.

[0013] As in the illustrated example, the boxlike body 2 can optionally have an upper cover 2a, which can be raised and is intended to cover the region in which the accommodation compartment 3 is located.

[0014] The accommodation compartment 3 has, at one end, an access opening 6 in order to allow the axial extraction of the brush 4.

[0015] The access opening 6 of the accommodation compartment 3 can be closed by means of a closure door 7, which in particular has a rim 30 that is capable of engaging by interlocking the rim of the open end 6.

[0016] According to the invention, elastic pusher means 8 are provided which are intended to act on the closure door 7 in order to facilitate its disengagement from the access opening 6.

[0017] Also according to the invention, there are furthermore means 7a for the removable locking of the closure door 7 which ensure that it is kept in the closed condition on the access opening 6.

[0018] In detail, the elastic pusher means 8 comprise at least one spring 9, which is interposed advantageously between the closure door 7 and the brush 4.

[0019] In particular, the spring 9 is advantageously rested, at one of its ends, against a shoulder 10, which is defined on the brush 4 and, at its other end, rests against the face of the closure door 7 that is directed toward the accommodation compartment 3.

[0020] More particularly, the spring 9 is accommodated in a chamber 11, which is defined axially within the brush 3 and is open at least at the end of the brush 3 that is directed toward the access opening 6 of the accommodation compartment 3.

[0021] As shown in particular in Figure 7, the chamber 11 is provided axially within a supporting roller 12 of the brush 4, on the outer surface of which cleaning bristles 12a are arranged.

[0022] Also along the axis of the supporting roller 12 there is advantageously also an accommodation cavity 13, in which an electric motor 14 for the actuation of the brush 4 is arranged.

[0023] In particular, the electric motor 14 is coupled, by means of its output shaft, to a contoured traction head 15, which in turn is coupled within a complementarily shaped seat 16, also defined within the supporting roller 11, between the chamber 10 and the accommodation cavity 13, in order to be able to impart to the supporting roller 11, and therefore to the brush 4, a rotary motion about its own axis.

[0024] According to the illustrated example, the shoulder 10 against which the spring 9 rests is defined by an annular region that is extended peripherally around the edge of the complementarily shaped seat 16, a diametrical dimension of which is smaller than the chamber 11 and the accommodation cavity 13 of the electric motor 14.

[0025] Advantageously, a supporting body 35 for the brush 4 is associated integrally with the closure door 7 and is adapted to engage within the chamber 11.

[0026] In particular, the supporting body 35 can be constituted for example by a disk, which is fixed to the main body of the closure door 7, for example by means of a threaded element 18, and can be inserted in the chamber 11 so as to engage the spring 9, so as to compress it against the shoulder 10.

[0027] Conveniently, the means 7a for removable locking of the closure door 7 are constituted by at least one pair of movable teeth 20, which are mutually opposite and are adapted to engage respective engagement seats 21 defined in the delimiting wall 5 of the accommodation compartment 3.

[0028] In greater detail, the movable teeth 20 are arranged laterally, on mutually opposite sides, with respect to a central plane of symmetry of the closure door 7 that is substantially vertical, and are mounted on the closure door 7 so that they can slide along a direction that is substantially perpendicular to said central plane of symmetry, between a locking position, in which they protrude laterally with respect to the rim 30 of the closure door 7, and a release position, in which they are accommodated within the perimeter of the closure door 7.

[0029] Conveniently, the movable teeth 20 are kept elastically in the locking position by elastic contrast springs.

[0030] Advantageously, respective actuation portions 22 are furthermore associated with the movable teeth 20, can slide along slots 23 and can be accessed on the outer side of the closure door 7, in order to allow the user to move them manually from the locking position to the release position in contrast with the action of the elastic contrast springs.

[0031] Use of the machine according to the invention is as follows.

[0032] If the user wishes to remove the brush 4 from the accommodation compartment 3, he initially lifts the upper cover 2a.

[0033] Then the user moves the movable teeth 20 from the locking position to the release position, achieving automatically the disengagement of the closure door 7 from the access opening 6, by way of the thrust applied by the

spring 9 to the closure door 7, with consequent uncoupling of the rim 30 from the rim of the access opening 6, without the user having to make any effort.

[0034] Once the closure door 7 has been removed in this way, the user can extract axially the brush 4 from the accommodation compartment 3 through the access opening 6.

[0035] When instead the user has to store the brush in the accommodation compartment 3, the user first inserts axially the brush 4 through the access opening 6 until it is completely inside the compartment.

[0036] Then he rests the closure door 7 against the end of the spring 9 that is directed toward the access opening 6 and optionally can protrude from the chamber 11, as shown in the figures, or can remain within the brush 4, and by applying a pushing force to the closure door 7 that is capable of overcoming the elastic reaction of the spring 9 it makes the supporting body 35 enter the chamber 11 and makes the rim 30 of the closure door 7 interlock with the rim of the access opening 6.

[0037] At this point, the movable teeth 20 can engage by snap action the respective engagement seats 21, thus ensuring the automatic locking of the closure door 7

[0038] From what has been described above it is evident that the invention is capable of achieving fully the intended aim, since it allows to facilitate considerably the operations for removing the closure door of the brush accommodation compartment.

[0039] All the characteristics of the invention indicated above as advantageous, convenient or the like may also be omitted or be replaced with equivalents.

[0040] The individual characteristics described with reference to general teachings or to particular embodiments may all be present in other embodiments or may replace characteristics in these embodiments.

[0041] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0042] In practice, the materials used, so long as they are compatible with the specific use, as well as the shapes and dimensions, may be any according to requirements.

[0043] All the details may further be replaced with other technically equivalent elements.

[0044] The disclosures in Italian Patent Application No. VR2014A000119 from which this application claims priority are incorporated herein by reference.

[0045] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A floor cleaning machine, particularly for household use, comprising a box-like body (2) that defines a compartment (3) for accommodating a cylindrical brush (4) that has a horizontal axis, said compartment (3) having, at one end, an access opening (6) that can be closed by means of a closure door (7) that has a rim (30) adapted to engage, by interlocking, the rim of said access opening (6), **characterized in that** it comprises elastic pusher means (8) that act on said closure door (7) in order to facilitate its disengagement from said access opening (6), means (7a) being provided for the removable locking of said closure door (7) in the condition for closing said access opening (6).
2. The machine according to claim 1, **characterized in that** said elastic pusher means (8) comprise at least one spring (9) that is interposed between said closure door (7) and said brush (4).
3. The machine according to claim 2, **characterized in that** said spring (9) rests, at one of its ends, against a shoulder defined on said brush (4) and abuts, at its other end, against the face of said closure door (7) that is directed toward said compartment (3).
4. The machine according to one or more of the preceding claims, **characterized in that** said spring (9) is accommodated in a chamber (11), which is defined axially in said brush (4) and is open at least at the end of said brush (4) that is directed toward said access opening (6), a supporting body (35) for the brush (4) being associated with said closure door (7) and being adapted to engage said chamber (11).
5. The machine according to one or more of the preceding claims, **characterized in that** said removable locking means (7a) comprise at least one pair of movable teeth (20), which are mutually opposite and are adapted to engage respective engagement seats (21) defined in the wall (5) that delimits said compartment (3).

Patentansprüche

1. Eine Bodenreinigungsmaschine, besonders für den Haushaltsgebrauch, die einen kastenartigen Körper (2) umfasst, der ein Fach (3) für die Unterbringung einer zylindrischen Bürste (4) bestimmt, die eine horizontale Achse hat, wobei das Fach (3) an einem Ende eine Zugangsöffnung (6) hat, die mit Hilfe einer Tür (7) verschlossen werden kann, welche einen Rand (30) hat, ausgebildet, um durch Verriegelung in den Rand der Zugangsöffnung (6) einzugreifen, **dadurch gekennzeichnet, dass** sie elastische

Schubmittel (8) umfasst, die auf die Tür (7) einwirken, um ihre Lösung aus der Zugangsöffnung (6) zu erleichtern, wobei Mittel (7a) zum lösbaren Verriegeln der Tür (7) im Zustand zum Verschließen der Zugangsöffnung (6) bereitgestellt sind.

2. Die Maschine gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die elastischen Schubmittel (8) mindestens eine Feder (9) umfassen, die zwischen der Tür (7) und der Bürste (4) angeordnet ist.
3. Die Maschine gemäß Anspruch 2, **dadurch gekennzeichnet, dass** die Feder (9) mit einem ihrer Enden an einer Schulter aufliegt, die an der Bürste (4) bestimmt ist, und mit ihrem anderen Ende an der Fläche der Tür (7) aufliegt, die dem Fach (3) zugewandt ist.
4. Die Maschine gemäß einem oder mehreren der obigen Ansprüche, **dadurch gekennzeichnet, dass** die Feder (9) in einer Kammer (11) untergebracht ist, die axial in der Bürste (4) bestimmt und mindestens an dem Ende der Bürste (4) offen ist, das der Zugangsöffnung (6) zugewandt ist, wobei ein Stützkörper (35) für die Bürste (4) mit der Tür (7) verbunden und ausgebildet ist, um in die Kammer (11) einzugreifen.
5. Die Maschine gemäß einem oder mehreren der obigen Ansprüche, **dadurch gekennzeichnet, dass** die lösbaren Verriegelungsmittel (7a) mindestens ein Paar beweglicher Zähne (20) umfassen, die einander gegenüberliegen und ausgebildet sind, um in entsprechende Eingriffssitze (21) einzugreifen, die in der Wand (5) bestimmt sind, die das Fach (3) begrenzt.

Revendications

1. Machine de nettoyage de sol, en particulier à usage domestique, comprenant un corps en forme de boîte (2) qui définit un compartiment (3) pour recevoir une brosse cylindrique (4) qui présente un axe horizontal, ledit compartiment (3) ayant, à une extrémité, une ouverture d'accès (6) qui peut être fermée au moyen d'une porte de fermeture (7) qui comporte un rebord (30) adapté à être engagé, par verrouillage mutuel, avec le rebord de ladite ouverture d'accès (6), **caractérisée en ce qu'**elle comprend des éléments de poussée élastiques (8) qui agissent sur ladite porte de fermeture (7) de façon à faciliter son désengagement à partir de ladite ouverture d'accès (6), des moyens (7a) étant prévus pour le verrouillage amovible de ladite porte de fermeture (7) dans la condition pour fermer ladite ouverture d'accès (6).
2. Machine selon la revendication 1, **caractérisée en**

ce que lesdits moyens de poussée élastiques (8) comprennent au moins un ressort (9) qui est interposé entre ladite porte de fermeture (7) et ladite brosse (4).

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3. Machine selon la revendication 2, **caractérisée en ce que** ledit ressort (9) repose, à l'une de ses extrémités, contre un épaulement défini sur ladite brosse (4) et bute, à son autre extrémité, contre la face de ladite porte de fermeture (7) qui est dirigée vers ledit compartiment (3).

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4. Machine selon l'une ou plusieurs des revendications précédentes, **caractérisée en ce que** ledit ressort (9) est reçu dans une chambre (11), qui est définie axialement dans ladite brosse (4) et qui est ouverte au moins à l'extrémité de ladite brosse (4) qui est dirigée vers ladite ouverture d'accès (6), un corps de support (35) pour la brosse (4) étant associé à ladite porte de fermeture (7) et étant adapté de façon à être engagé avec ladite chambre (11).

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5. Machine selon l'une ou plusieurs des revendications précédentes, **caractérisée en ce que** lesdits moyens de verrouillage amovibles (7a) comprennent au moins une paire de dents mobiles (20), qui sont mutuellement opposées et qui sont adaptées à être engagées avec des sièges de prise respectifs (21) définis dans la paroi (5) qui délimite ledit compartiment (3).

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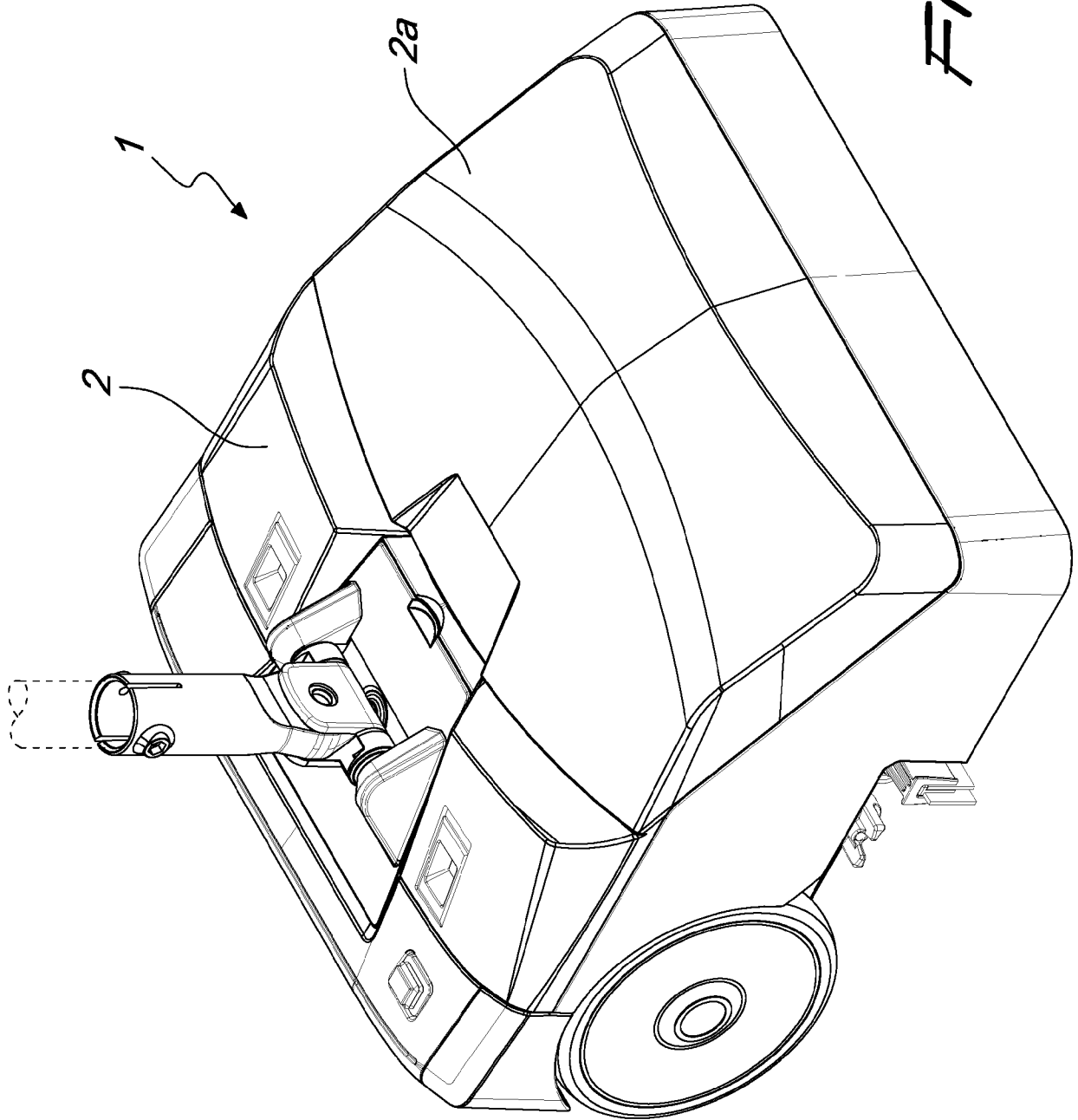


Fig. 1

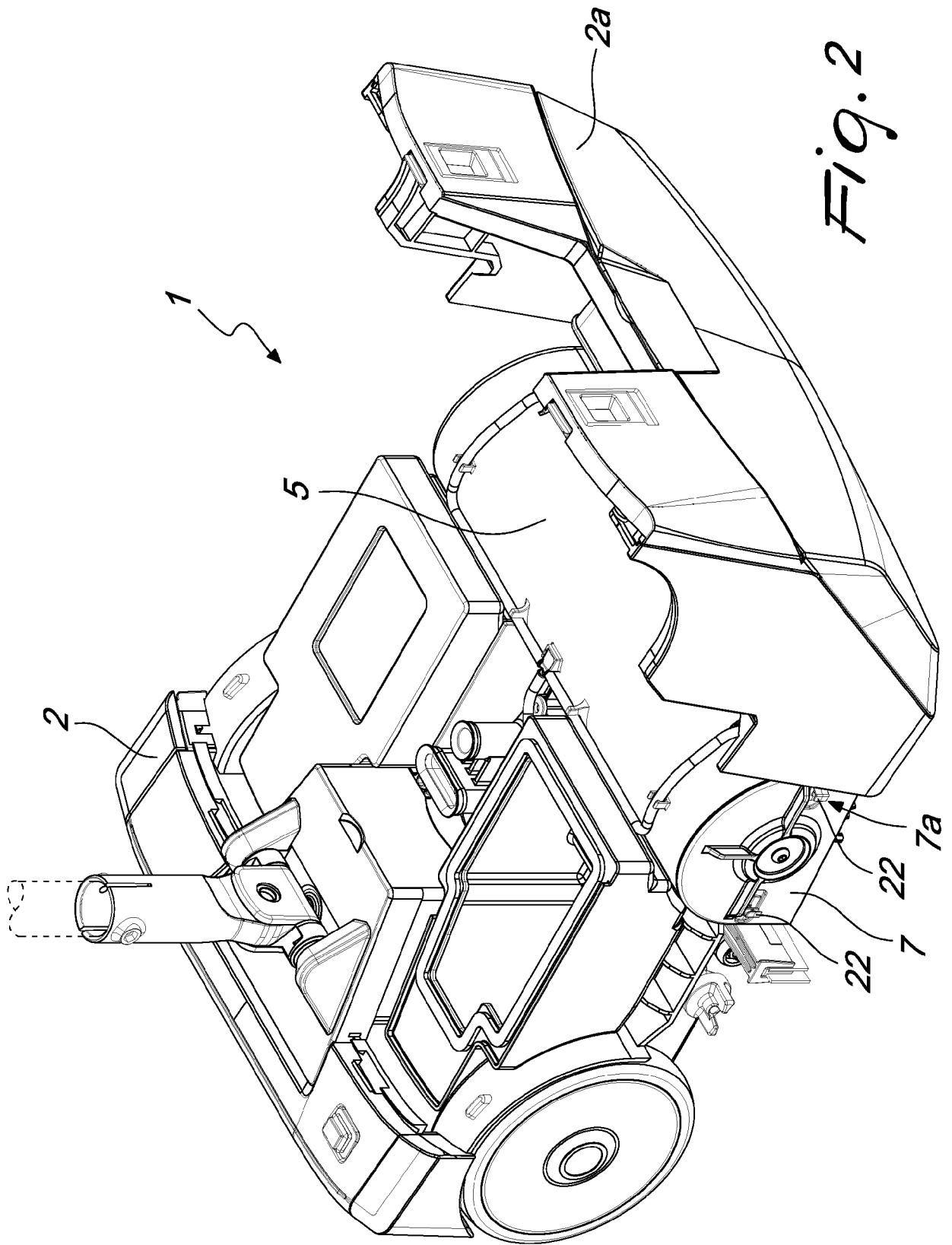


Fig. 2

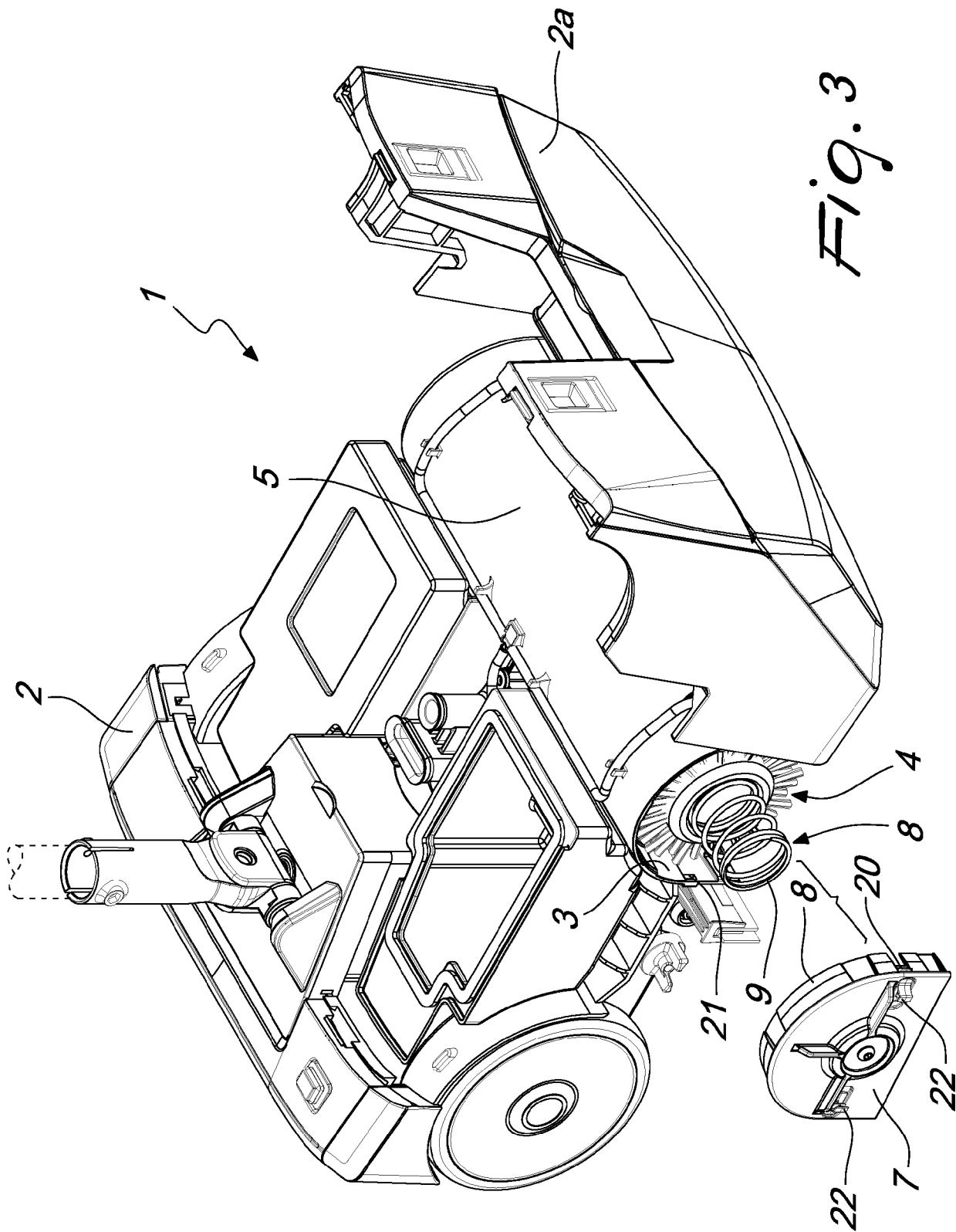


Fig. 3

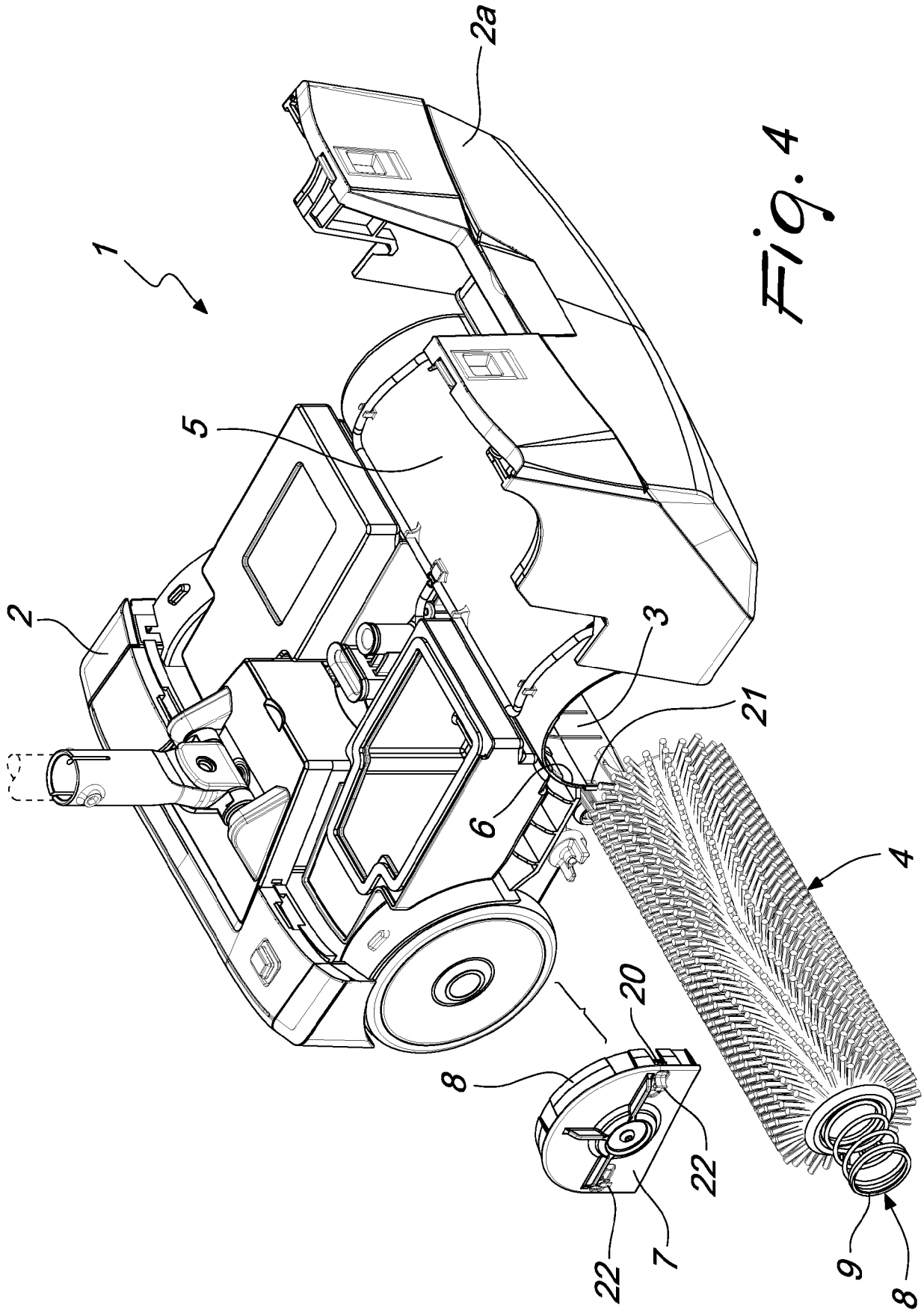


Fig. 4

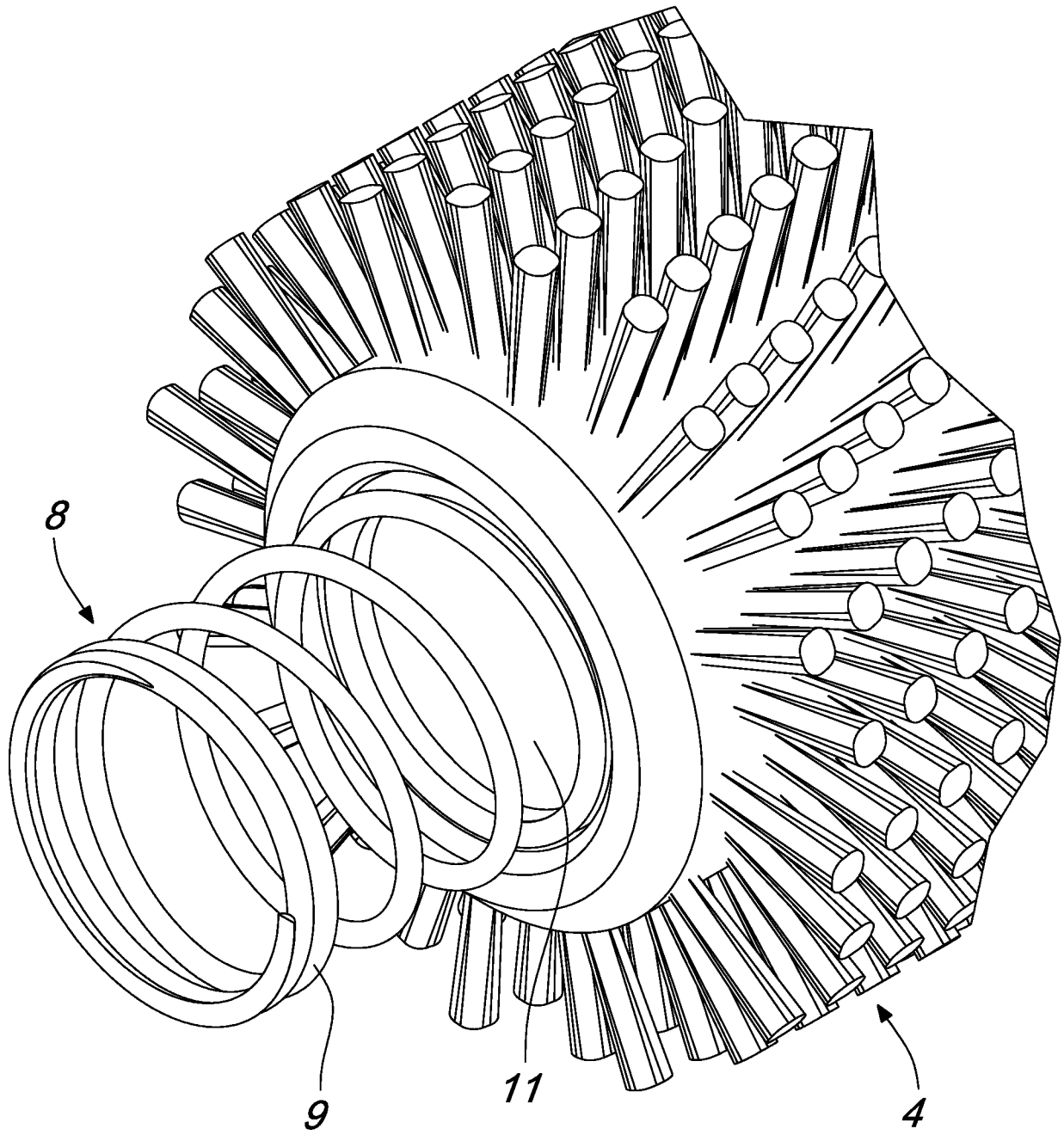


Fig. 5

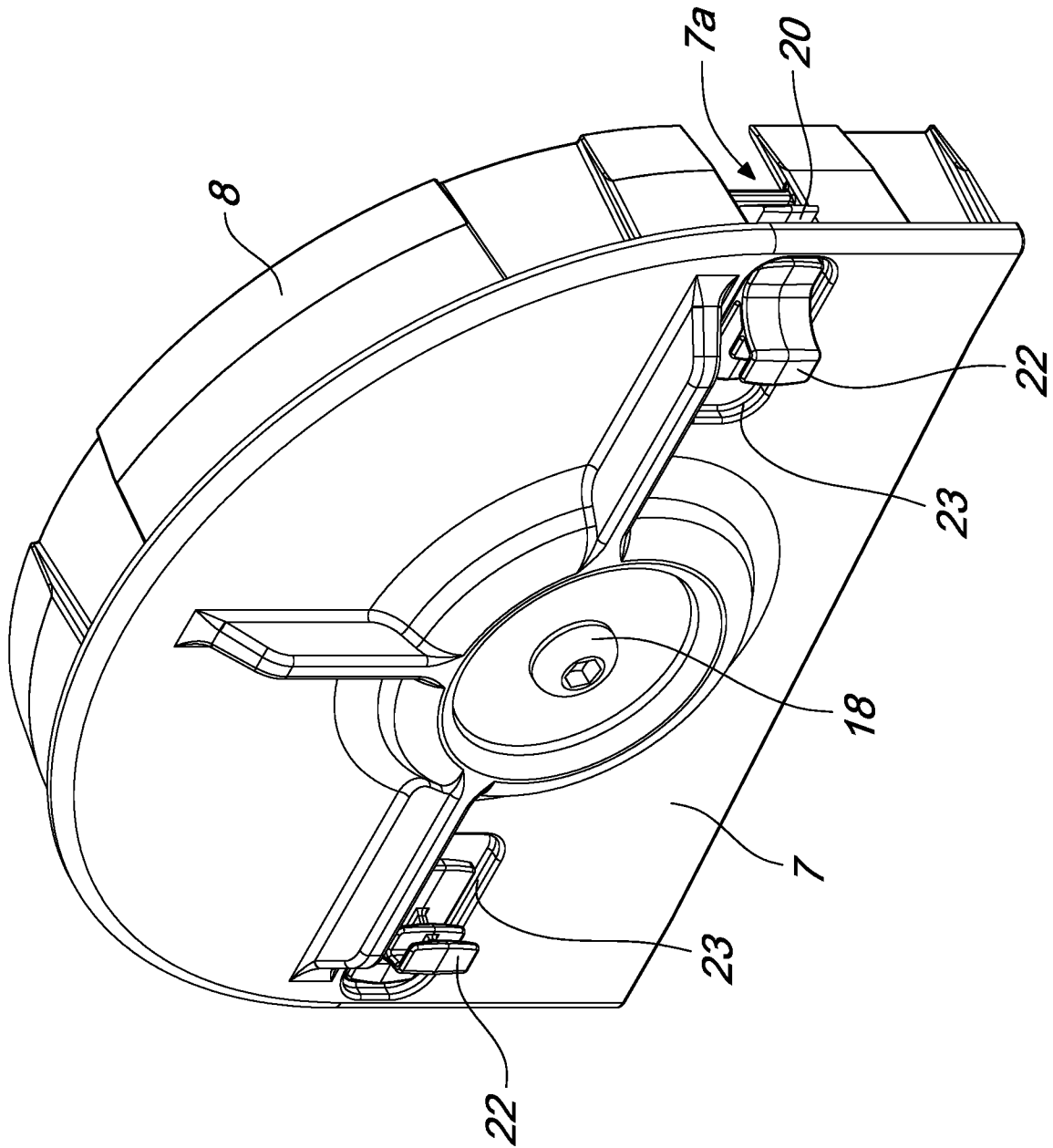


Fig. 6

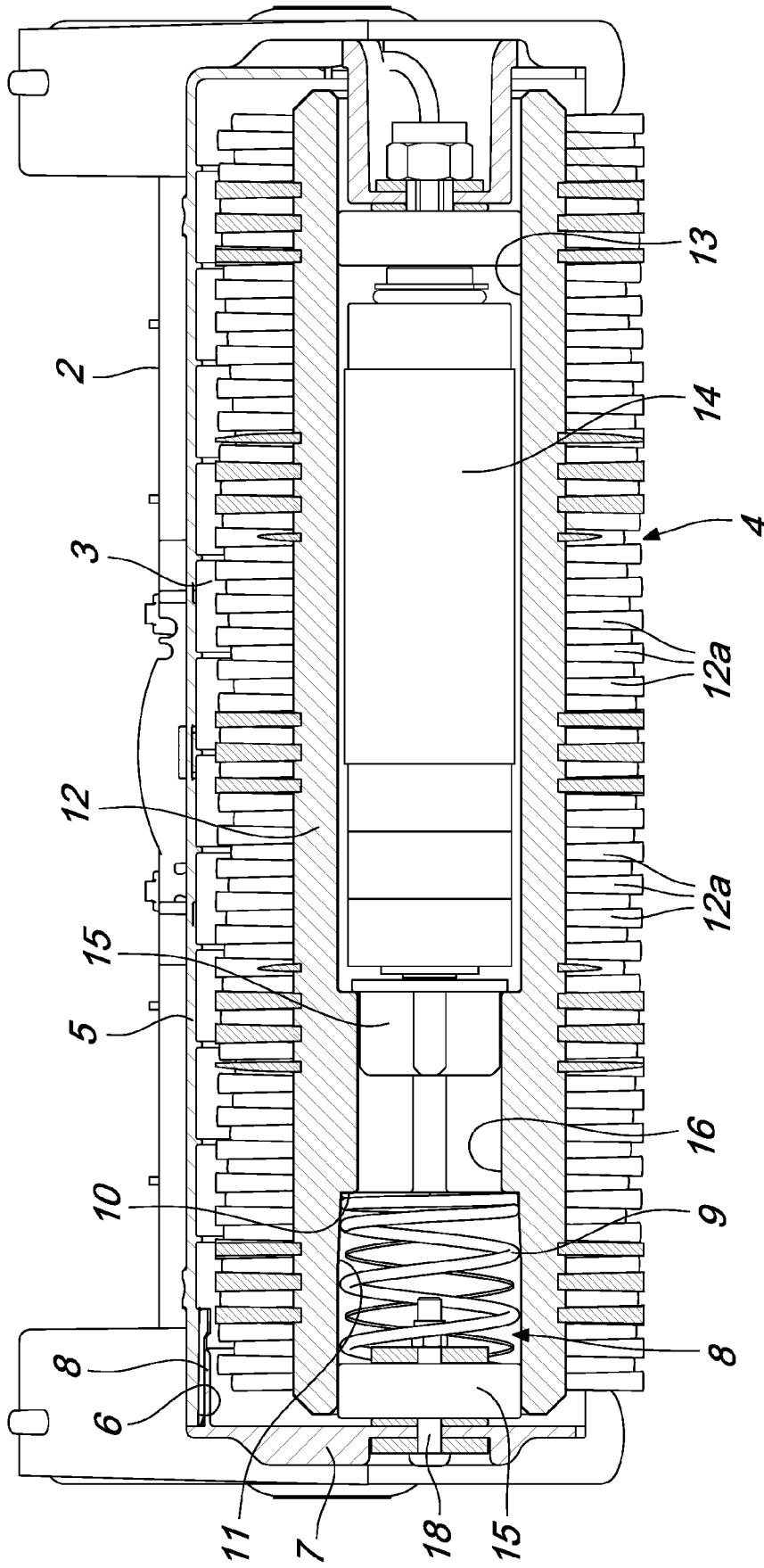


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1639932 A2 [0003]
- IT VR20140119 A [0044]

PADLÓTISZTÍTÓ BERENDEZÉS, ELSŐSORBAN HÁZTARTÁSI HASZNÁLATRA

SZABADALMI IGÉNYPONTOK

1. Padlótisztító berendezés, elsősorban háztartási használatra, ami tartalmaz egy doboz-szerű testet (2), aminek van egy ürege (3) egy vízszintes hengeres kefe (4) befogadására, amely üreg (3) egyik végén egy fedéllel (7) zárható bevezető nyílással (6) van ellátva, ahol a fedélnek van egy pereme (30), ami zárásakor illeszkedik a bevezető nyílás (6) pereméhez, **azzal jellemezve**, hogy tartalmaz rugalmas szorítóelemet (8), ami a fedélre (7) hat, hogy megkönnyítse leválasztását a bevezető nyílásról (6), valamint eltávolítható eszközt (7a) a fedél (7) lezárására, amikor az a bevezető nyílást (6) lezárja.
2. Az 1. igénypont szerinti berendezés, **azzal jellemezve**, hogy a rugalmas szorítóelem (8) legalább egy rugó (9), ami a fedél (7) és a kefe (4) között van elrendezve.
3. A 2. igénypont szerinti berendezés, **azzal jellemezve**, hogy a rugó (9) egyik végén a kefe (4) vállrészén nyugszik és másik vége a fedélnek (7) az üreg (3) felé néző oldalán támaszkodik.
4. Az előző igénypontok bármelyike szerinti berendezés, **azzal jellemezve**, hogy a rugó (9) egy kamrában (11) van elhelyezve, ami a kefében (4) van axiálisan kialakítva, és nyitott a kefe (4) legalább azon végénél, ami a bevezető nyílás (6) felé néz, és a fedéllel (7) egy, a kefét (4) támasztó test (35) kapcsolódik, ami illeszkedik a kamrához (11).
5. Az előző igénypontok bármelyike szerinti berendezés, **azzal jellemezve**, hogy az eltávolítható eszköz (7a) a fedél (7) lezárására tartalmaz legalább egy pár mozgatható fogat (20), amik egymással szemben vannak elrendezve, és megfelelő ülékekbe (21) illeszkednek az üreget (3) határoló falban (5).

