



(11) **EP 1 733 673 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
31.03.2010 Bulletin 2010/13

(51) Int Cl.:
A47L 9/24 *(2006.01)* **F16L 27/00** *(2006.01)*
A47L 5/32 *(2006.01)*

(21) Application number: **06253069.6**

(22) Date of filing: **13.06.2006**

(54) **Vacuum cleaner**

Staubsauger

Aspirateur

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

(30) Priority: **14.06.2005 GB 0512161**

(43) Date of publication of application:
20.12.2006 Bulletin 2006/51

(73) Proprietor: **HOOVER LIMITED
Merthyr Tydfil,
Mid Glamorgan CF48 1PQ (GB)**

(72) Inventors:
• **Henderson, Christopher Richard
Shanghai, 200041 (CN)**

- **Richardson, Ross
Auchterarder
Perthshire PH3 1DQ (GB)**
- **Sherriff, Andrew Sinclair
Glenmavis, Airdrie
N.Lanarkshire ML6 0NR (GB)**
- **Edwards, William
Bellshill
Lanarkshire ML4 1TF (GB)**

(74) Representative: **Davies, Gregory Mark
Urquhart-Dykes & Lord LLP
Churchill House
Churchill Way
Cardiff CF10 2HH (GB)**

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EP 1 733 673 B1

Description

[0001] The present invention relates to a vacuum cleaner and more particularly to a vacuum cleaner having a telescopic suction nozzle.

[0002] Our European patent application No. 1,464,267 discloses a vacuum cleaner of the upright type, which comprises an upright body pivotally mounted at its lower end to a floor-engaging unit enabling limited rotation of the body forwardly and rearwardly, relative to the floor-engaging unit, about an axis extending transverse of the cleaner. The body houses a motor-driven fan unit which serves to develop suction to draw air in through an inlet in the floor-engaging unit and into a dust-separation unit, mounted to the body of the cleaner. A motor-driven, rotary agitator brush is mounted across the floor-engaging unit, in the air inlet thereof, to beat and sweep the floor in the region of the airflow into the cleaner. The cleaner also comprises a combined handle and suction nozzle unit of elongate form, having an end portion formed as a handle or handgrip and a tubular portion extending from the handle to form a suction nozzle: the free end of the tubular portion forms a second suction inlet of the cleaner and an air outlet is formed in the side of the tubular portion, adjacent its junction with the handgrip, a flexible hose being coupled between this air outlet and the upright body of the cleaner.

[0003] For use of the cleaner for floor cleaning, the tubular portion of the combined handle and suction nozzle unit is inserted into a socket with which the upright body of the cleaner is formed, the handle portion of the unit projecting to form a handgrip for use in manoeuvring the cleaner over the floor: the free end of the tubular portion of the handle and suction nozzle unit abuts a spring-biased actuating member of a changeover valve to depress this actuating member and hold the valve in a position to communicate suction, developed by the fan unit of the cleaner, to the suction inlet in the floor-engaging unit. When the combined handle and suction nozzle unit is withdrawn from its socket, the actuating member of the valve is free to move under its spring bias and so move the valve into a position to communicate suction to the suction nozzle, via the flexible hose, instead of to the air inlet in the floor-engaging unit of the cleaner: the user is now able to use the suction nozzle for above-floor cleaning. The tubular portion which forms the suction nozzle is shaped to form a so-called crevice tool, its cross-section changing from a circular shape to a generally rectangular shape as the nozzle tapers to its free end.

[0004] Although the combined handle and suction nozzle unit is instantly ready for many above-floor cleaning tasks upon being withdrawn from the cleaner body, the fitting of accessories, for example an extension tube, is necessary for other tasks. It is known to store such accessories on the cleaner body, typically in retaining sockets or by means of retaining clips.

[0005] For cleaning some relatively inaccessible loca-

tions, for example, the user must remove an extension tube from its receptacle on the body of the cleaner, and fit this extension tube to the suction nozzle before cleaning can commence. After the cleaning operation, the extension tube must be detached from the suction nozzle and returned to its storage location on the cleaner body. A solution to this problem is the provision of a telescopic tube in the handle and suction nozzle unit, as in US 5 617 611.

[0006] We have now devised arrangements which enable further simplification in use of vacuum cleaners of the above-described type. The terms tube and tubular are used throughout to define an elongate hollow member. The elongate hollow member may have a generally constant cross-section e.g. generally circular, elliptical, square or alternatively may be of varying cross-section.

[0007] In accordance with the present invention, there is provided a vacuum cleaner according to independent claim 1.

[0008] Preferably, the second tube is formed as a suction nozzle or tool, for example as a so-called crevice tool.

[0009] Preferably the combined handle and suction inlet or suction nozzle unit includes means serving to lock or latch the first and second tubes against relative longitudinal displacement, when the tubes are in one or more predetermined positions relative to one another: in a preferred embodiment, the tubes latch together only when in the fully extended condition or in the fully contracted condition, but not when in any intermediate positions.

[0010] In a preferred embodiment, a latching mechanism is provided, which comprises a sleeve mounted on the second or outer tube and arranged for limited displacement longitudinally of that tube: the latching mechanism is arranged so that upon displacement of the sleeve forwardly, when the tubes are in a contracted condition, the latch between the two tubes becomes disengaged to permit the tubes to be extended by a continuing displacement of the sleeve in the forward direction.

[0011] Preferably the latching mechanism includes a resiliently biased part provided at one end thereof with a projection which engages with a recess formed in the outer surface of the first or inner tube when the tubes are in their contracted condition, and an element coupled to the sleeve and arranged to act on the resiliently biased part, to displace its projection out of its recess in the first tube, upon displacement of the sleeve in the forward direction.

[0012] Preferably the resiliently biased part comprises a leaf spring. Alternatively the resiliently biased part is biased by a spring, most preferably a compression spring.

[0013] Preferably the latching mechanism is also arranged so that upon displacement of the sleeve rearwardly, when the tubes are in an extended condition, the latch between the two tubes becomes disengaged to permit the tubes to be contracted by a continuing displacement of the sleeve in the rearward direction.

[0014] Preferably the latching mechanism includes a

second resiliently biased part, provided at one end thereof with a projection which engages with a recess formed in the outer surface of the inner tube when the tubes are in their extended condition, the element coupled to the sleeve being arranged to act on the second resiliently biased part, to displace its projection out of its recess in the first tube, upon displacement of the sleeve in the rearward direction.

[0015] Preferably the second resiliently biased part comprises a leaf spring. Alternatively the second resiliently biased part is biased by a spring, most preferably a compression spring.

[0016] Preferably the element coupled to the sleeve comprises a roller. Preferably the roller is coupled to the sleeve by a member which fits into a window formed in the sleeve, and includes at least one projection which is formed with a notch which receives an axle portion of the roller.

[0017] It will be appreciated that the above-described latching mechanism may be used with advantage in other tubular arrangements of telescopic construction, particularly but not solely for vacuum cleaner suction inlets.

[0018] In an alternative embodiment of the above-defined vacuum cleaner, the second or outer tube is provided, at its rear end, with an external screw-thread, and an internally screw-threaded sleeve is engaged over this: rotation of the sleeve serves to compress a compression ring disposed between the outer tube and the inner tube, in order to clamp these together.

[0019] Embodiments of the present invention will now be described by way of example only and with reference to the accompanying drawings, in which:

FIGURE 1 is a side view of a vacuum cleaner in accordance with the present invention, shown with its combined handle and suction nozzle unit retained within a socket of the upright body of the cleaner so that the cleaner is configured for floor cleaning;

FIGURE 2 is a similar view of the vacuum cleaner of Figure 1, shown with its combined handle and suction nozzle unit withdrawn from its socket for the cleaner to be used for above-floor cleaning;

FIGURE 3 is an enlarged view of the combined handle and suction nozzle unit of the cleaner, shown in its contracted condition;

FIGURE 4 is a similar view of the combined handle and suction nozzle unit, shown in its extended condition;

FIGURE 5 is a view of the underside of the handle and suction nozzle unit;

FIGURE 6 is an enlarged view of a carrier member and a sleeve cover of the latching mechanism of the handle and suction nozzle unit;

FIGURES 7a and 7b show an enlarged cross-sectional view of part of the latching mechanism of FIGURE 6;

FIGURE 8 is an enlarged view of a carrier member of an alternative embodiment of the latching mechanism;

anism;

FIGURE 9 is a view of the underside of the carrier member of FIGURE 8; and

FIGURE 10 is an enlarged, cut-away view of a handle and suction nozzle unit provided with a modified mechanism for locking it telescopic tubes in desired positions.

[0020] Referring to Figures 1 and 2 of the drawings, there is shown an upright vacuum cleaner which comprises an upright body 10 pivotally mounted, at its lower end, to a floor-engaging unit 11 having a pair of wheels 11a at its rear: the pivotal mounting of the body 10 enables partial rotation of the body 10 forwardly and rearwardly relative to the floor-engaging unit 11, about a pivotal axis which extends transversely of the cleaner. A motor-driven fan unit (not shown) is housed within the body 10 and serves, in use, to develop suction. A first suction inlet 13 is provided in the underside of the floor-engaging unit 11 adjacent its front and a motor-driven, rotating agitator brush (not shown) is mounted transversely of the cleaner in the suction inlet 13. The vacuum cleaner also comprises a cyclone separation unit 14 of cylindrical form, mounted to the front of the body 10, and arranged to separate out dirt and dust from the air which is drawn by suction into the cleaner, and to collect the separated-out dirt and dust.

[0021] The vacuum cleaner further comprises a combined handle and suction nozzle unit 12, which is of elongate form and shown, in Figure 1, received in a vertical socket 16 provided in the rear of the upright body 10 of the cleaner, such that an end portion 19 of the unit 12 projects to form a handle for the cleaner. The unit 12, when received within the socket 16, is retained in place by a catch 17, provided on the body 10 of the cleaner adjacent to top of the socket 16, engaging a barb 18 on the side of the unit 12. The handle 19 is shaped to provide a handgrip for a user to grasp for manoeuvring the cleaner during floor cleaning. The unit 12 further comprises a tubular portion 22 projecting from the handle 19 and forming an airflow duct between a second suction inlet 24 of the cleaner, at the free end of the tubular portion 22, and an air outlet 25 formed in the side of the tubular portion 22, adjacent its junction with the handle 19. An elongate, flexible hose 26 is coupled at one end thereof to the air outlet 25 of the unit 12, and at the opposite end thereof to the body 10 of the cleaner. As will be described below, the tubular portion 22 of unit 12 is telescopic.

[0022] When the cleaner is used for conventional floor cleaning, the unit 12, in its contracted condition, is fitted into the socket 16 of the body 10, as shown in Figure 1. The free end of the tubular portion 22 abuts a spring-biased actuator member of a valve (not shown) to depress the actuator member and hold the valve in a position to communicate suction from the fan unit to the first suction inlet 13 in the underside of the floor-engaging unit 11 of the cleaner. In order to use the cleaner for above-floor cleaning, the catch 17 is released manually

to enable the user to withdraw the unit 12 from its socket 16: this allows the actuator member of the valve to move under its spring bias, and so move the valve to a position to communicate suction from the fan unit to the second suction inlet 24 via the flexible hose and the air duct within the tubular portion 22 of the unit 12. The tubular portion 22 of the unit 12 forms a suction nozzle for above-floor cleaning, and in particular (in the example shown) is shaped to provide a so-called crevice tool, although it may instead be formed as any alternative type of suction tool.

[0023] As mentioned above, the tubular portion 22 of the unit 12 is telescopic in form. Referring to Figures 3 and 4 of the drawings, the tubular portion 22 of the unit 12 comprises a first or inner tube 30 joined at one end to the handle 19, and a second or outer tube 32 slidably received over the first or inner tube. The inner and outer tubes are of uniform, generally circular cross-section, but the forward end of the outer tube 32 tapers and changes to a generally rectangular cross-section, thus forming a so-called crevice tool. The outer tube 32 may be slid along the inner tube 30, to change the suction nozzle between the contracted condition shown in Figure 3 and the extended condition shown in Figure 4: the outer tube 32 is prevented from rotating relative to the inner tube, for example by a longitudinal groove being formed in the outer surface of the inner tube 30 and a projection formed on the inner surface of the outer tube and engaged into this longitudinal groove.

[0024] Figures 5 and 6 show a mechanism provided for latching the outer tube 32 at each end of its travel relative to the inner tube 30. The mechanism comprises a carrier member 34, in the form of a generally rectangular frame, mounted in a recess adjacent the rear end of the outer tube 32 and extending longitudinally of the tube 32. A roller member 35 extends across the carrier member 34 and its enlarged ends are arranged to run on rails along opposite sides of the carrier member 34. Two leaf springs 36, 38 extend lengthwise of the carrier member 34, the first spring 36 having one of its ends fixed to one end of the carrier member 34 and the second spring 38 having one of its ends fixed to the opposite end of the carrier member 34. Each spring 36, 38 has an inwardly-inclined portion 36a, 38a intermediate its ends and terminates in an end portion 36b, 38b which carries an inwardly-directed pin 37, 39. The two springs 36, 38 extend over the reduced-diameter or axle portion of the roller member 35. A sleeve 40 is disposed around the outer tube 32 of the suction nozzle, over the latching mechanism: the sleeve 40 is formed with a rectangular window 41, registered with the position of the latching mechanism, and a cover member 42 is snap-engaged into the window. The cover member 42 is formed, along its opposite edges, with flanges 43 which are formed with notches 44, which receive the axle portion of the roller member 35. The sleeve 40 is slidable along the outer tube 32 of the nozzle and it will be appreciated that movement of the sleeve 40, in either axial direction, will drive

the roller member 35 along the carrier member 34.

[0025] When the suction nozzle is in its contracted condition, the pin 37 of the first spring 36 engages into a socket or recess formed in the outer surface of the inner tube 30 as shown in Figure 7a, to latch the tubes 30, 32 against relative longitudinal movement. In order to disengage the latch and extend the nozzle, the user grips the sleeve 40 and displaces it forwardly in the direction of the suction nozzle: this drives the roller member 35 forwardly along the carrier member 34 and the roller member 35 accordingly engages the inclined portion 36a of the first spring 36 to lift this spring so that its pin 37 is lifted out of the socket of the inner member, into which it was engaged. A stop (not shown) is provided to limit the movement of the sleeve 40 relative to the outer tube 32 of the nozzle. When the sleeve 40 reaches this stop, continued forward movement of the sleeve will move the outer tube 32 forwards into its extended position, at which the pin 39 on the second spring 38 will engage into a socket or recess in the outer surface of the inner tube 30, adjacent its forward end, to latch the nozzle in its extended condition as shown in Figure 7b. In order to disengage the latch and contract the nozzle, the user grips the sleeve 40 and displaces it rearwardly away from the suction nozzle: this drives the roller member 35 rearwardly along the carrier member 34, the roller member 35 accordingly engaging the inclined portion 38a of the second spring 38 to lift this spring and lift its pin 39 out of the socket or recess of the inner tube 30, into which it was engaged. When the sleeve 40 reaches the stop which limits its movement relative to the outer tube 32, continued rearward movement of the sleeve 40 will move the outer tube 32 rearwards into its contracted position, at which the pin 37 on the first spring 36 will engage into the socket or recess in the inner tube 30, adjacent its rear end.

[0026] Figures 8 and 9 show an alternative mechanism to that of figure 6 for latching the outer tube at each end of its travel relative to the inner tube. Leaf springs 36, 38 are replaced with two rigid lever elements 61, 63. The first rigid lever element 61 is pivotally attached at one of its ends to the carrier member 34 while the second rigid lever element is pivotally attached at one of its ends to the opposite end of the carrier member 34. The rigid lever elements 61, 63 are resiliently biased inwardly by compression springs 65 and 67. Each rigid lever element 61, 63 has an inwardly directed pin 69, 71. As will be clear to the person skilled in the art the latching mechanism of figures 7 and 8 operates in a similar manner to that illustrated and described with reference to figure 6. Movement of the sleeve 40 drives the roller member 35 along the carrier member 34 and the roller member 35 engages the inclined portion of either the first or second rigid lever element depending on whether the suction nozzle is initially in its contracted or expanded position. The continued movement of the roller member 35 causes the rigid lever element 61 or 63 to pivot, compressing the spring 65 or 67 against upper portion 73 or 75 of the carrier

member and lifting the pin 69 or 71 out of the socket or recess of the inner tube 30, into which it was engaged.

[0027] Figure 10 shows a modified arrangement for locking the two tubes 30, 32 of the suction nozzle and serving to lock these tubes in any desired position longitudinally of each other. In this arrangement, a cylindrical member 50, having an external screw-thread 51, is fixed to or forms part of the rear end of the outer tube 32 and a compression ring 52 is disposed in an annular space between the cylindrical member 50 and the inner tube 30, at the rear end of the cylindrical member 50. A sleeve 54, having an internal screw-thread 55, is engaged over the cylindrical member 50: sleeve 54 is formed at its rear end with an inwardly-directed annular flange 57. The inner tube 30 is formed with a longitudinal groove 56 into which a projection on the inner surface of the outer tube 32 engages, to prevent rotation of the outer tube 32 around the inner tube, as it is slid along the latter. In order to lock the outer tube 32 at any desired position along the inner tube 30, the sleeve 54 is rotated by hand to advance it along the cylindrical member 50, for its flange 57 to clamp against the compression ring 52, causing the compression ring 52 to be compressed axially and expand radially, thus clamping between the cylindrical member 50 and the inner tube 30.

[0028] It will be appreciated that the arrangements which have been described provide for a suction nozzle of improved versatility, which is simple to extend or contract as desired and is of simple construction.

[0029] The invention covers not only individual embodiments as discussed but combinations of embodiments as well. It is to be understood that modifications and variations of the present invention will become apparent to those skilled in the art and it is intended that all such modifications will be included within the scope of the present invention.

Claims

1. A vacuum cleaner comprising a floor-engaging unit (11) having a suction inlet (13) for floor cleaning, an upright body (10) mounted to said floor-engaging unit and including means for creating a suction and means (14) for separating and collecting dirt from an airstream drawn in by said suction, a unit having a handle (19) and a tubular portion (22) extending from said handle, said tubular portion forming a suction inlet (24) for above-floor cleaning and being coupled to said body via a flexible hose (26), and said tubular portion being attachable to said body with said handle (19) projecting for the user to grasp for manoeuvring the cleaner over the floor, said tubular portion (22) comprising first (30) and second (32) tubes which are telescopically coupled together to enable said tubular portion to be extended when detached from said body **characterised in that** the first tube (30) is joined to or extends from the handle and wherein the second tube (32) forms an outer tube disposed over the first or inner tube, the second tube (32) being received in a socket 16 in the body 10 of the cleaner for floor cleaning.
2. A vacuum cleaner according to claim 1 or claim 2, wherein the second tube (32) is formed as a suction nozzle or tool.
3. A vacuum cleaner according to any preceding claim, wherein the tubular portion includes means serving to lock or latch the first and second tubes against relative longitudinal displacement, when the tubes are in one or more predetermined positions relative to one another and preferably the tubes latch together only when in a fully extended condition or in a fully contracted condition, but not when in any intermediate positions.
4. A vacuum cleaner according to any of claims 2 or 3, including a latching mechanism which comprises a sleeve (40) mounted on the second tube (32) and arranged for limited displacement longitudinally of that tube and preferably wherein the latching mechanism is arranged so that upon displacement of the sleeve in a forward direction towards the suction inlet (24), when the tubes are in a contracted condition, the latch between the two tubes becomes disengaged to permit the tubes to be extended by a continuing displacement of the sleeve in the forward direction.
5. A vacuum cleaner according to claim 4, wherein the latching mechanism includes a resiliently biased part (36) provided at one end thereof with a projection (37) which engages with a recess formed in the outer surface of the first or inner tube (30) when the tubes are in their contracted condition, and an element (35) coupled to the sleeve and arranged to act on the resiliently biased part (36), to displace its projection (37) out of its recess in the first tube, upon displacement of the sleeve in the forward direction.
6. A vacuum cleaner according to claim 5, wherein the latching mechanism is also arranged so that upon displacement of the sleeve in a rearward direction away from the suction inlet (24), when the tubes are in an extended condition, the latch between the two tubes becomes disengaged to permit the tubes to be contracted by a continuing displacement of the sleeve in the rearward direction.
7. A vacuum cleaner according to claim 6, wherein the latching mechanism includes a second resiliently biased part (38), provided at one end thereof with a projection (39) which engages with a recess formed in the outer surface of the inner tube when the tubes are in their extended condition, the element (35) cou-

pled to the sleeve being arranged to act on the second resiliently biased part (38), to displace its projection out of its recess in the first tube, upon displacement of the sleeve in the rearward direction.

8. A vacuum cleaner according to any of claims 5 to 7, wherein the resiliently biased part (36,38) comprises a leaf spring and/or wherein the element (35) coupled to the sleeve comprises a roller.
9. A vacuum cleaner according to claim 8, wherein the roller (35) is coupled to the sleeve (40) by a member (42) which fits into a window formed in the sleeve, and includes at least one projection (43) which is formed with a notch (44) which receives an axle portion of the roller (35).
10. A vacuum cleaner according any of claims 1 to 3, wherein the second tube is provided, at its rear end, with an external screw-thread (51), and an internally screw-threaded sleeve (54) is engaged over this and preferably wherein rotation of the sleeve serves to compress a compression ring (52) disposed between the second tube and the first tube, in order to clamp these together.

Patentansprüche

1. Staubsauger mit einer den Fußboden in Eingriff nehmenden Einheit (11) mit einem Saugeinlass (13) zum Reinigen über den Fußboden, einem aufrechten Körper (10), der an der den Fußboden in Eingriff nehmenden Einheit montiert ist und Mittel zur Erzeugung einer Saugung und Mittel (14) zum Abscheiden und Sammeln von Schmutz aus einem durch die Saugung eingesogenen Luftstrom aufweist, einer Einheit mit einem Griff (19) und einem rohrförmigen Abschnitt (22), der sich von dem Griff erstreckt, wobei der rohrförmige Abschnitt einen Saugeinlass (24) zum Reinigen oberhalb des Fußbodens bildet, über einen flexiblen Schlauch (26) an den Körper gekoppelt ist und an den Körper anbringbar ist, wobei der Griff (19) vorragt, so dass der Benutzer ihn ergreifen kann, um den Staubsauger über den Fußboden zu manövrieren, wobei der rohrförmige Abschnitt (22) ein erstes (30) und ein zweites (32) Rohr umfasst, die teleskopartig zusammengekoppelt sind, damit der rohrförmige Abschnitt ausgefahren werden kann, wenn er vom Körper gelöst ist, **dadurch gekennzeichnet, dass** das erste Rohr (30) mit dem Griff verbunden ist oder sich vom Griff erstreckt und wobei das zweite Rohr (32) ein äußeres Rohr bildet, das über dem ersten oder inneren Rohr angeordnet ist und in einer Buchse (16) im Körper (10) des Staubsaugers zum Reinigen über den Fußboden aufgenommen wird.

2. Staubsauger nach Anspruch 1 oder 2, wobei das zweite Rohr (32) als Saugdüse oder -werkzeug ausgebildet ist.

3. Staubsauger nach einem der vorhergehenden Ansprüche, wobei der rohrförmige Abschnitt Mittel aufweist, die dazu dienen, das erste und das zweite Rohr gegen eine Relativverschiebung in Längsrichtung zu verriegeln oder zu verrasten, wenn sich die Rohre in einer oder mehreren vorbestimmten Positionen zueinander befinden, und wobei die Rohre vorzugsweise nur miteinander verrasten, wenn sie sich in einem voll ausgefahrenen Zustand oder in einem voll zusammengeschobenen Zustand befinden, aber nicht, wenn sie sich in irgendwelchen Zwischenpositionen befinden.

4. Staubsauger nach Anspruch 2 oder 3, mit einem Rastmechanismus, der eine Hülse (40) umfasst, die an dem zweiten Rohr (32) montiert und zur begrenzten Verschiebung dieses Rohrs in Längsrichtung angeordnet ist, und vorzugsweise wobei der Rastmechanismus so angeordnet ist, dass der Riegel zwischen den beiden Rohren bei der Verschiebung der Hülse in einer Vorwärtsrichtung zum Saugeinlass (24), wenn die Rohre in einem zusammengeschobenen Zustand sind, ausgerückt wird, damit die Rohre durch eine fortgesetzte Verschiebung der Hülse in der Vorwärtsrichtung ausgefahren werden können.

5. Staubsauger nach Anspruch 4, wobei der Rastmechanismus einen federnd vorgespannten Teil (36) aufweist, der an seinem einen Ende mit einem Vorsprung (37) versehen ist, der mit einer in der Außenfläche des ersten oder inneren Rohrs (30) ausgebildeten Ausnehmung in Eingriff kommt, wenn sich die Rohre in ihrem zusammengeschobenen Zustand befinden, sowie ein Element (35), das an die Hülse gekoppelt und so angeordnet ist, dass es auf den federnd vorgespannten Teil (36) wirkt, um seinen Vorsprung (37) bei der Verschiebung der Hülse in Vorwärtsrichtung aus seiner Ausnehmung im ersten Rohr heraus zu verschieben.

6. Staubsauger nach Anspruch 5, wobei der Rastmechanismus ebenfalls so angeordnet ist, dass der Riegel zwischen den beiden Rohren bei der Verschiebung der Hülse in einer Rückwärtsrichtung vom Saugeinlass (24) weg, wenn die Rohre in einem ausgefahrenen Zustand sind, ausgerückt wird, damit die Rohre durch eine fortgesetzte Verschiebung der Hülse in der Rückwärtsrichtung zusammengeschoben werden können.

7. Staubsauger nach Anspruch 6, wobei der Rastmechanismus einen zweiten federnd vorgespannten Teil (38) aufweist, der an seinem einen Ende mit

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einem Vorsprung (39) versehen ist, der mit einer in der Außenfläche des inneren Rohrs ausgebildeten Ausnehmung in Eingriff kommt, wenn sich die Rohre in ihrem ausgefahrenen Zustand befinden, wobei das an die Hülse gekoppelte Element (35) so angeordnet ist, dass es auf den zweiten federnd vorgespannten Teil (38) wirkt, um seinen Vorsprung bei der Verschiebung der Hülse in Rückwärtsrichtung aus seiner Ausnehmung im ersten Rohr heraus zu verschieben.

8. Staubsauger nach einem der Ansprüche 5 bis 7, wobei der federnd vorgespannte Teil (36, 38) eine Blattfeder umfasst und/oder wobei das an die Hülse gekoppelte Element (35) eine Rolle umfasst.
9. Staubsauger nach Anspruch 8, wobei die Rolle (35) über ein Element (42) an die Hülse (40) gekoppelt ist, das in ein in der Hülse ausgebildetes Fenster passt und mindestens einen Vorsprung (43) aufweist, der mit einer Kerbe (44) ausgebildet ist, die einen Achsabschnitt der Rolle (35) aufnimmt.
10. Staubsauger nach einem der Ansprüche 1 bis 3, wobei das zweite Rohr an seinem hinteren Ende mit einem Außengewinde (51) versehen ist und eine Hülse (54) mit einem Innengewinde sich damit in Eingriff befindet und vorzugsweise wobei eine Drehung der Hülse dazu dient, einen zwischen dem zweiten Rohr und dem ersten Rohr angeordneten Kompressionsring (52) zusammenzudrücken, um diese zusammenzuklemmen.

Revendications

1. Aspirateur comprenant une unité d'engagement avec le sol (11) ayant une entrée d'aspiration (13) pour le nettoyage au sol, un corps vertical (10) monté sur ladite unité d'engagement avec le sol et comportant un moyen pour créer une succion et un moyen (14) pour séparer et recueillir la saleté provenant d'un flux d'air aspiré par ladite succion, une unité ayant une poignée (19) et une portion tubulaire (22) s'étendant depuis ladite poignée, ladite portion tubulaire formant une entrée de succion (24) pour un nettoyage au-dessus du sol et étant accouplée audit corps par le biais d'un tuyau flexible (26), et ladite portion tubulaire pouvant être attachée audit corps avec ladite poignée (19) saillant de manière à être saisie par l'utilisateur pour manoeuvrer l'aspirateur sur le sol, ladite portion tubulaire (22) comprenant des premier (30) et deuxième (32) tubes qui sont accouplés de manière télescopique l'un à l'autre de manière à permettre à ladite portion tubulaire d'être prolongée lorsqu'elle est détachée dudit corps, **caractérisé en ce que** le premier tube (30) est réuni à la poignée ou s'étend depuis la poignée et le

deuxième tube (32) forme un tube externe disposé par-dessus le premier tube ou tube interne, le deuxième tube (32) étant reçu dans une prise 16 dans le corps 10 de l'aspirateur pour le nettoyage au sol.

2. Aspirateur selon la revendication 1, dans lequel le deuxième tube (32) est formé sous forme de buse ou d'outil de succion.
3. Aspirateur selon la revendication 1 ou 2, dans lequel la portion tubulaire comporte un moyen servant à verrouiller ou encliqueter les premier et deuxième tubes pour empêcher leur déplacement longitudinal l'un par rapport à l'autre, lorsque les tubes sont dans une ou plusieurs positions prédéterminées l'un par rapport à l'autre et de préférence les tubes s'encliquetant ensemble uniquement lorsqu'ils sont dans l'état complètement étendu ou dans l'état complètement rentré, mais pas lorsqu'ils sont dans une position intermédiaire quelconque.
4. Aspirateur selon l'une quelconque des revendications 2 ou 3, comportant un mécanisme d'encliquetage qui comprend un manchon (40) monté sur le deuxième tube (32) et prévu pour se déplacer de manière limitée longitudinalement audit tube et de préférence dans lequel le mécanisme d'encliquetage est agencé de manière à ce que, lors du déplacement du manchon dans une direction avant vers l'entrée de succion (24), lorsque les tubes sont dans un état rentré, l'encliquetage entre les deux tubes devienne désengagé de manière à permettre aux tubes d'être étendus par un déplacement continu du manchon dans la direction avant.
5. Aspirateur selon la revendication 4, dans lequel le mécanisme d'encliquetage comporte une partie sollicitée de manière élastique (36), munie à une extrémité de celui-ci, d'une saillie (37) qui s'engage avec un retrait formé dans la surface externe du premier tube ou tube interne (30) lorsque les tubes sont dans leur état rentré, et un élément (35) accouplé au manchon et agencé de manière à agir sur la partie sollicitée de manière élastique (36) pour déplacer sa saillie (37) hors de son retrait dans le premier tube, lors du déplacement du manchon dans la direction avant.
6. Aspirateur selon la revendication 5, dans lequel le mécanisme d'encliquetage est également agencé de telle sorte que lors du déplacement du manchon dans une direction arrière, à l'écart de l'entrée de succion (24), lorsque les tubes sont dans un état étendu, l'encliquetage entre les deux tubes devienne désengagé afin de permettre aux tubes d'être rentrés par un déplacement continu du manchon dans la direction arrière.

7. Aspirateur selon la revendication 6, dans lequel le mécanisme d'encliquetage comporte une deuxième partie sollicitée de manière élastique (38), pourvue à l'une de ses extrémités d'une saillie (39) qui s'engage avec un retrait formé dans la surface externe du tube interne lorsque les tubes sont dans leur état étendu, l'élément (35) accouplé au manchon étant agencé de manière à agir sur la deuxième partie sollicitée de manière élastique (38), pour déplacer sa saillie hors de son retrait dans le premier tube, lors du déplacement du manchon dans la direction arrière. 5 10
8. Aspirateur selon l'une quelconque des revendications 5 à 7, dans lequel la partie sollicitée de manière élastique (36, 38) comprend un ressort à lame et/ou dans lequel l'élément (35) accouplé au manchon comprend un rouleau. 15
9. Aspirateur selon la revendication 8, dans lequel le rouleau (35) est accouplé au manchon (40) par un organe (42) qui s'ajuste dans une fenêtre formée dans le manchon, et comporte au moins une saillie (43) qui est formée avec une encoche (44) qui reçoit une portion d'axe du rouleau (35). 20 25
10. Aspirateur selon l'une quelconque des revendications 1 à 3, dans lequel le deuxième tube est pourvu, à son extrémité arrière, d'un filetage de vis extérieur (51), et un manchon à filetage de vis intérieur (54) est engagé par-dessus celui-ci et de préférence dans lequel la rotation du manchon sert à comprimer un ressort de compression (52) disposé entre le deuxième tube et le premier tube, afin de les serrer ensemble. 30 35

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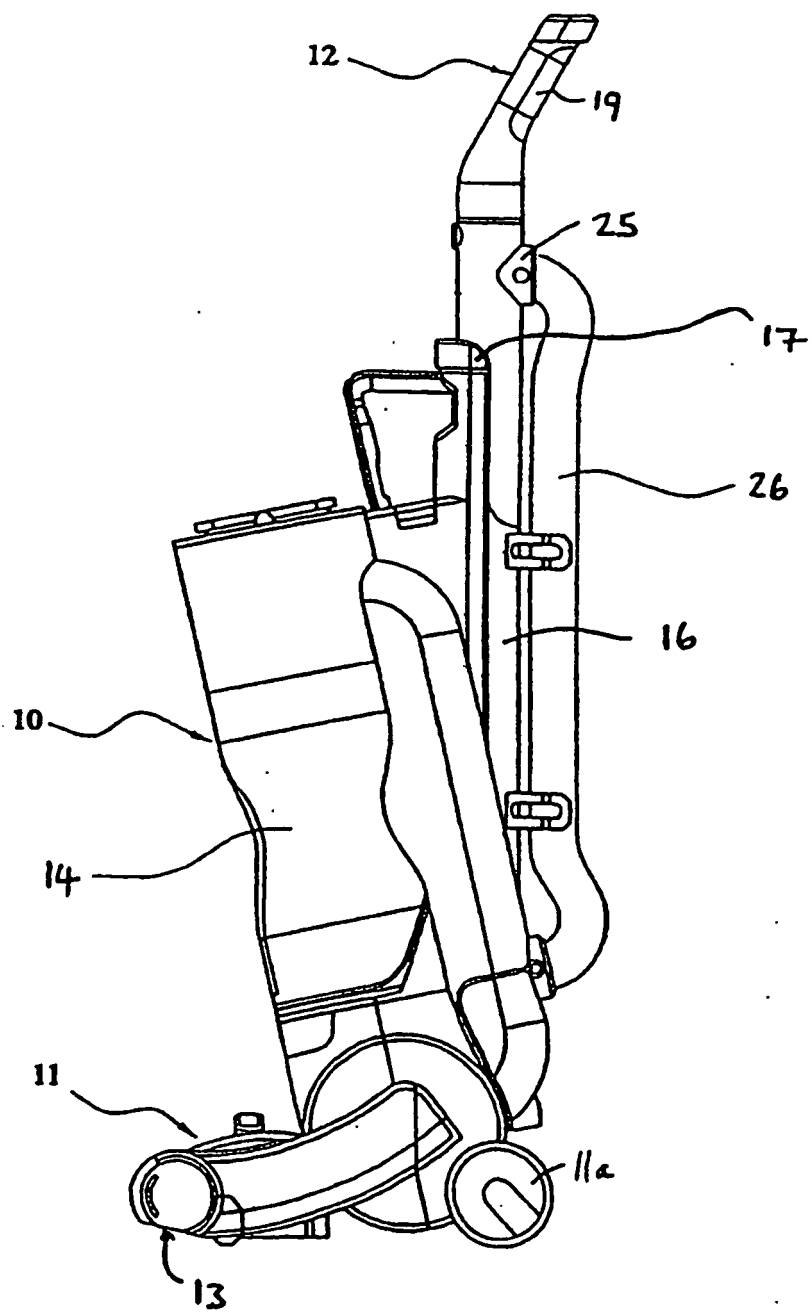
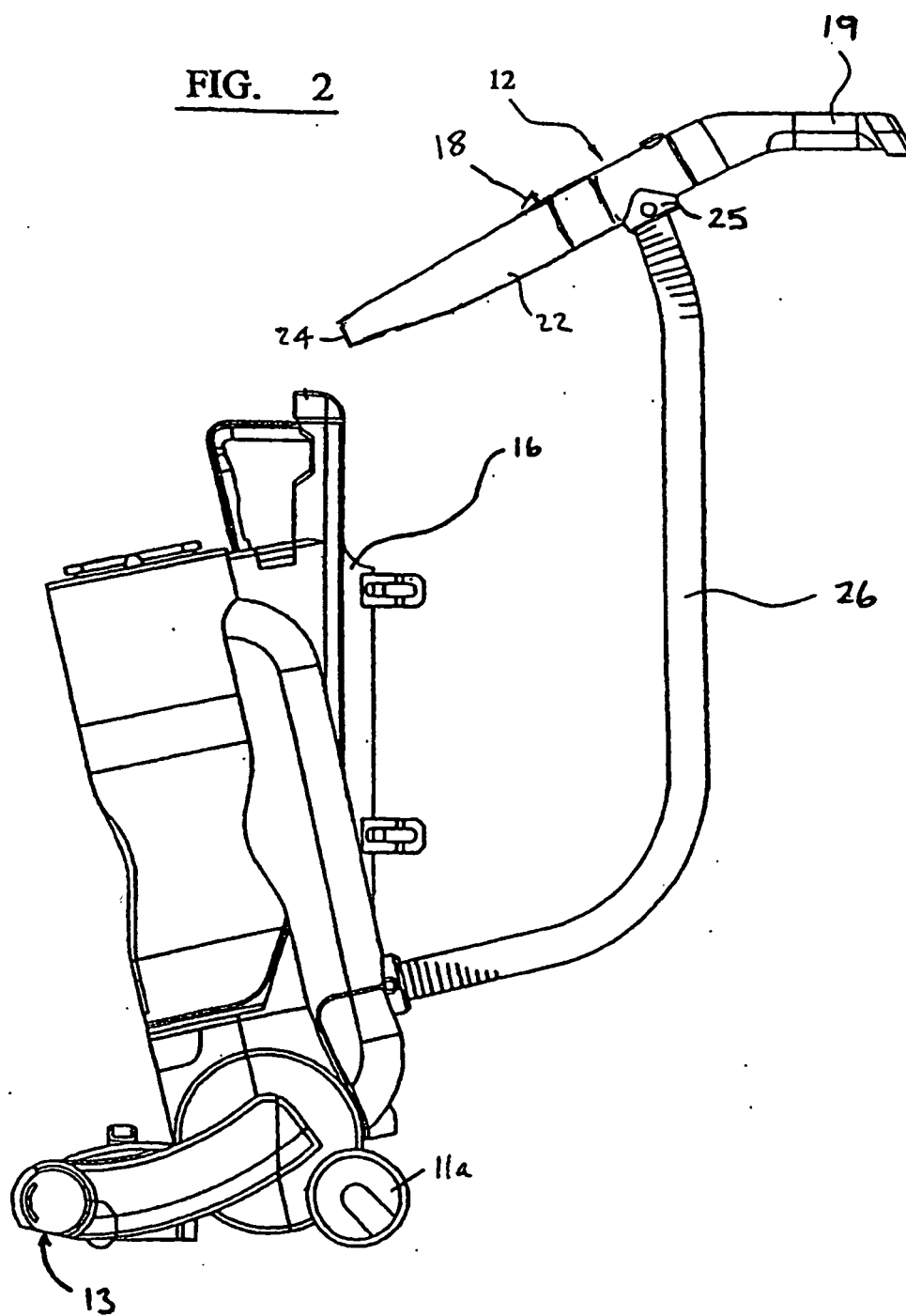


FIG. 1

FIG. 2



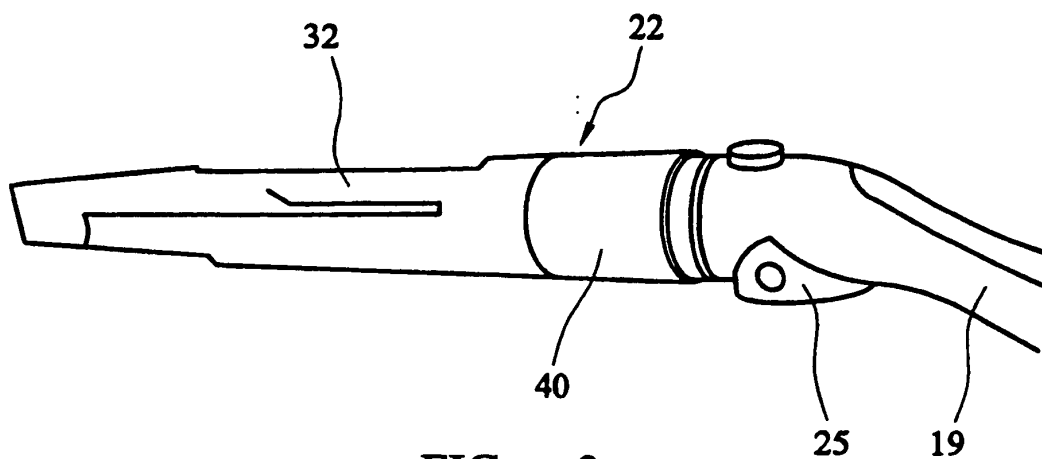


FIG. 3

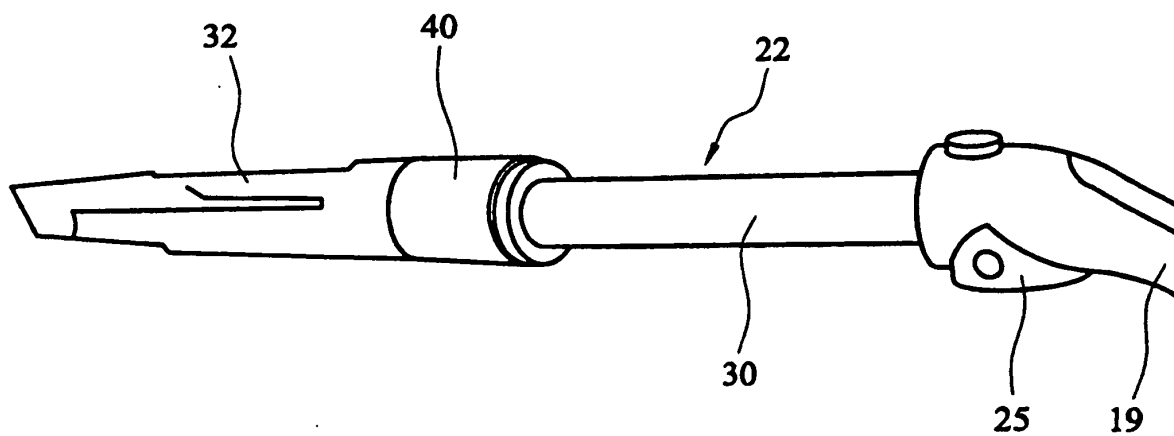


FIG. 4

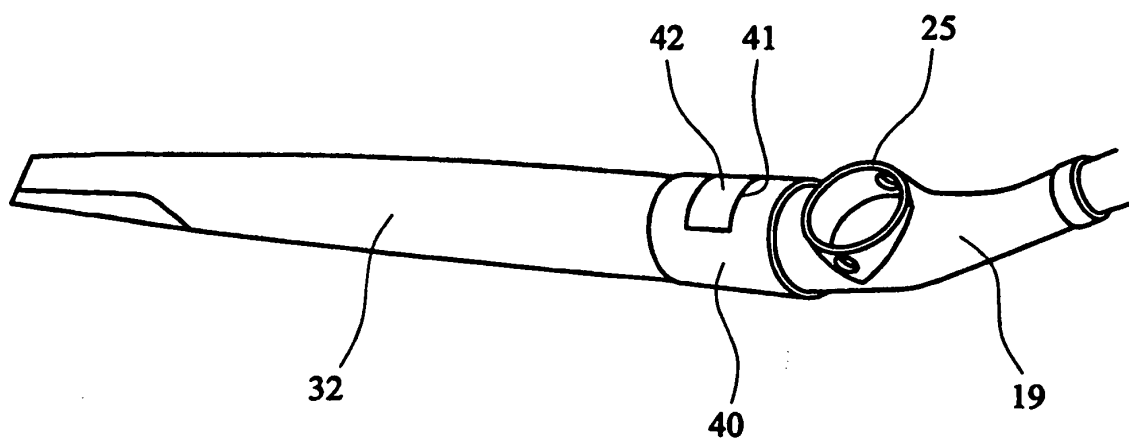


FIG. 5

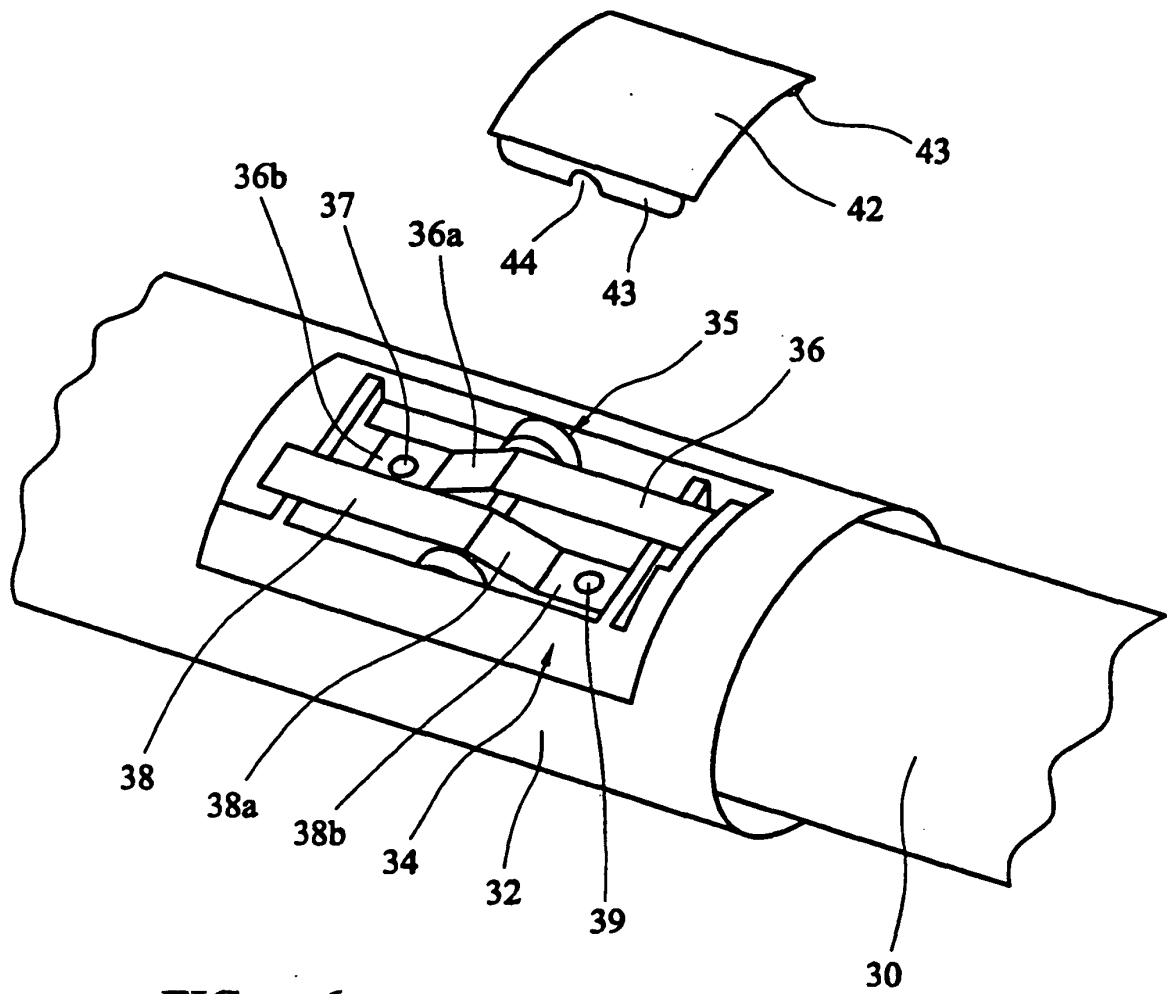


FIG. 6

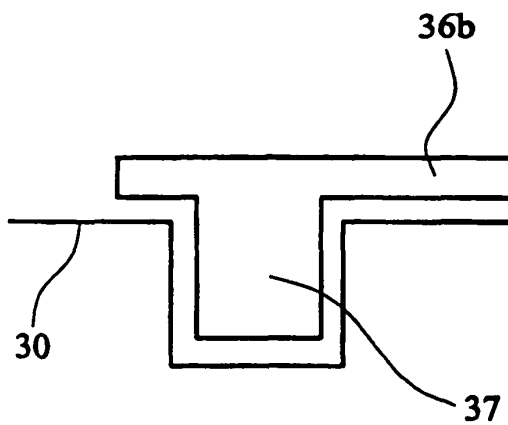


FIG. 7a

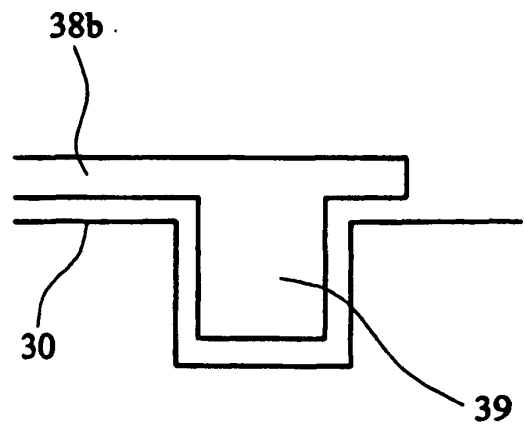


FIG. 7b

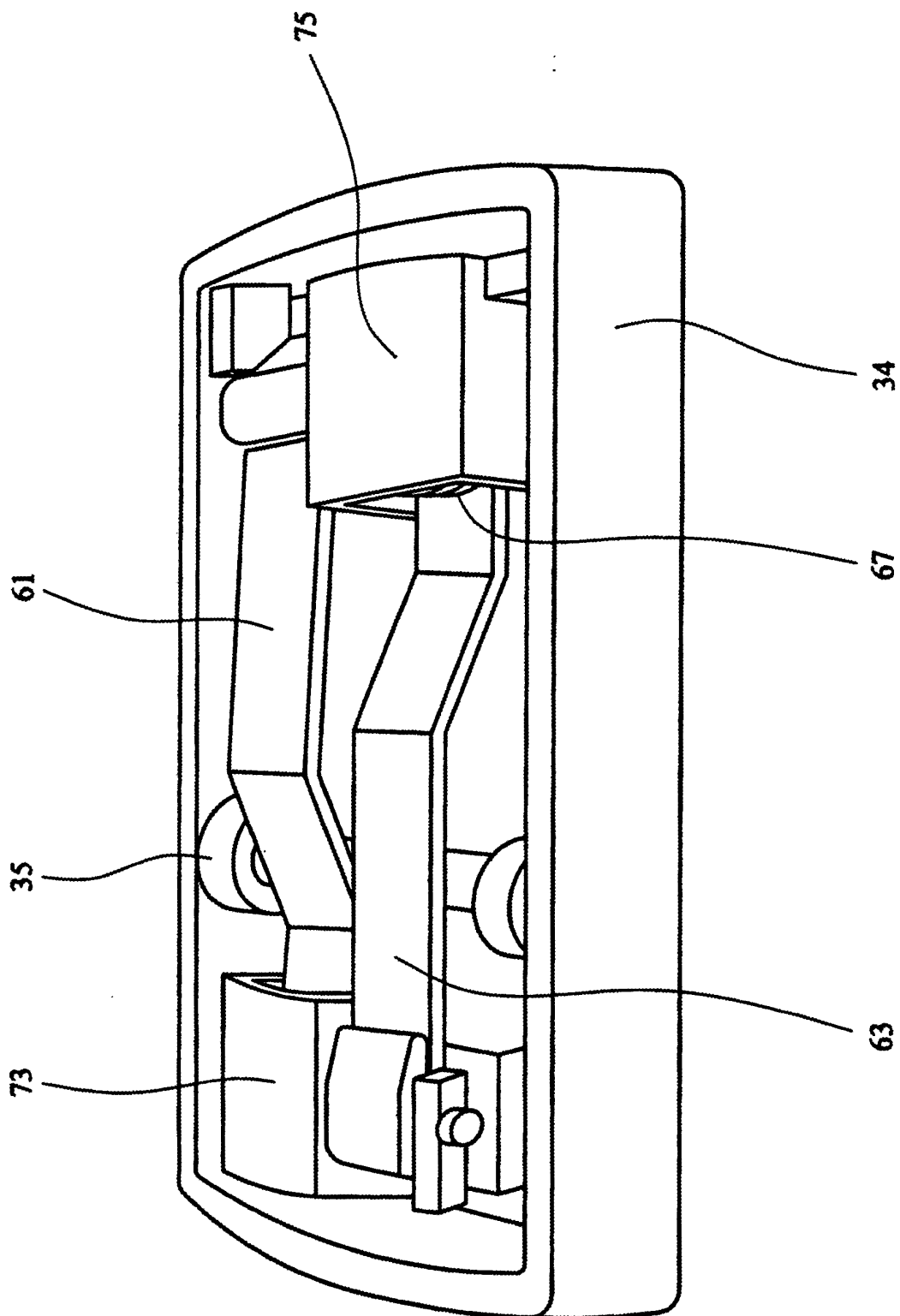


FIG. 8

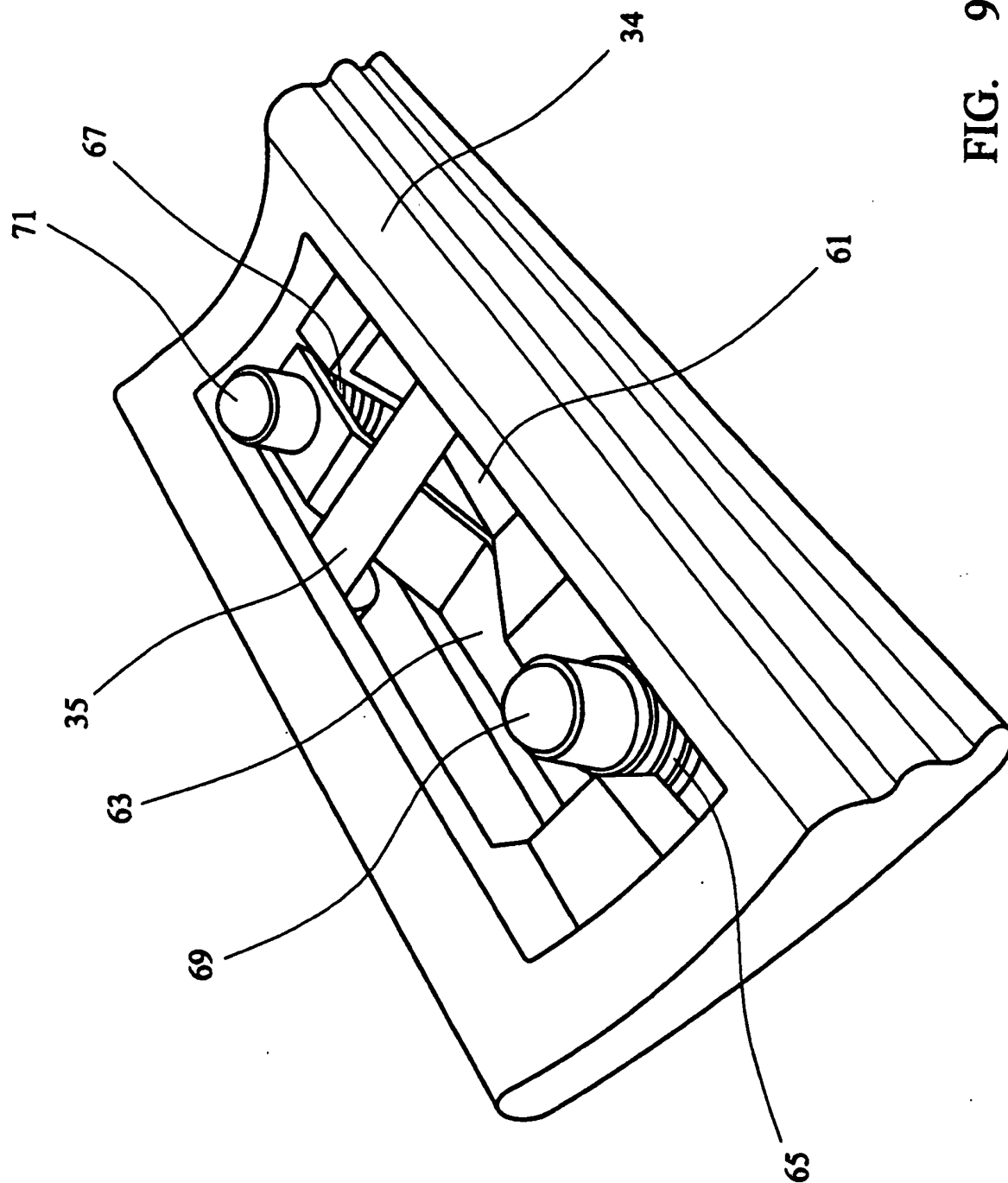


FIG. 9

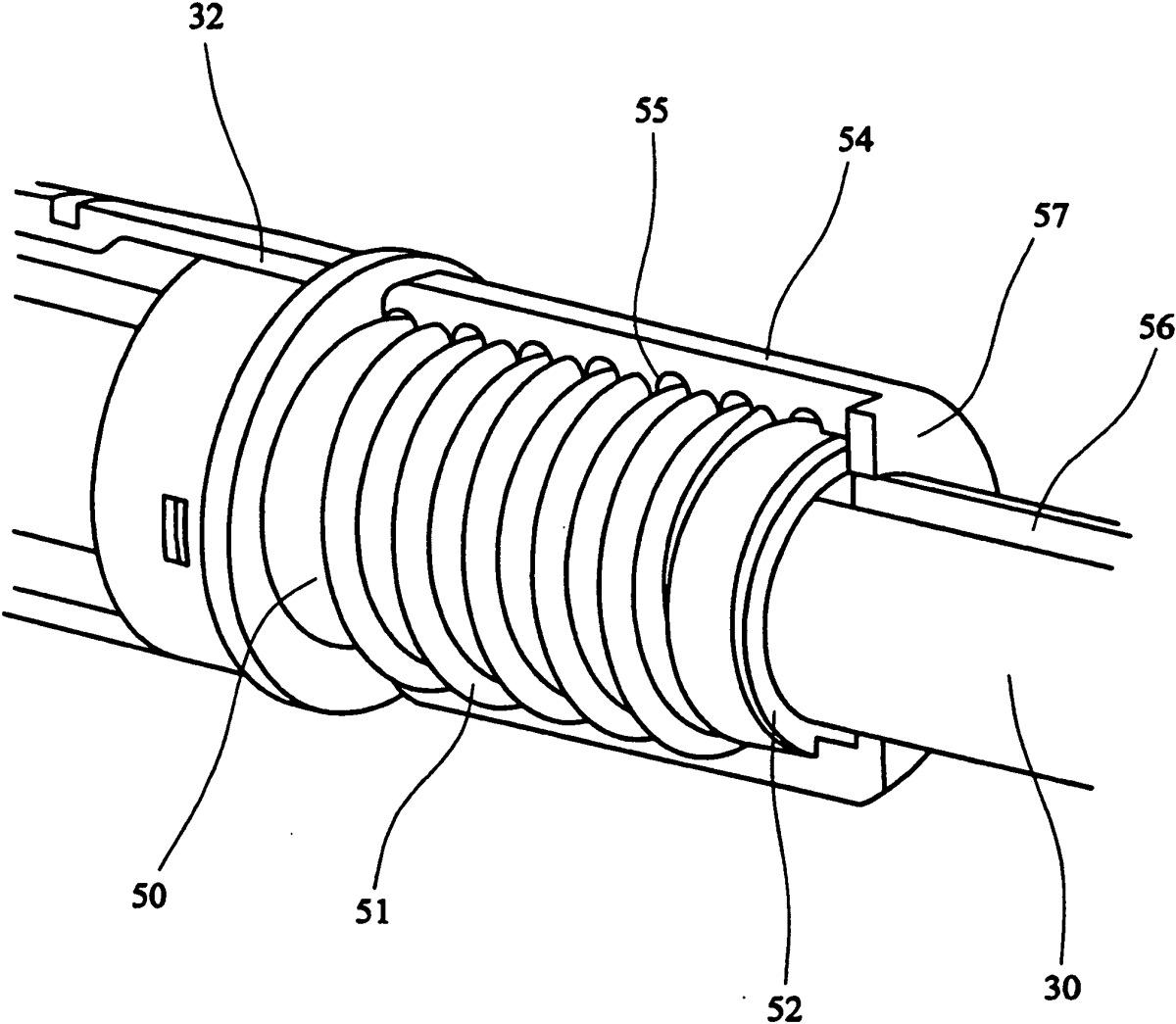


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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