US 20010006588A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2001/0006588 A1**

Zorzo (43) **Pub. Date: Jul. 5, 2001**

(54) **BROOM PROVIDED WITH A REGULATOR FOR CONTROLLING THE FLOW OF FLOOR CLEANING AND TREATMENT PRODUCTS**

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(21) Appl. No.: **09/726,149**

(22) Filed: **Nov. 29, 2000**

(30) **Foreign Application Priority Data**

Dec. 30, 1999 (LU)..... 90496

Publication Classification

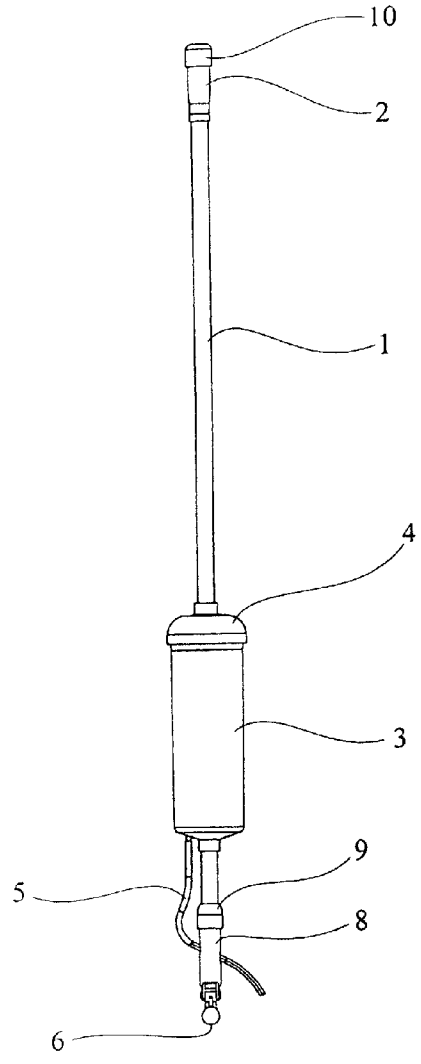
(51) **Int. Cl.**[7] **A46B 11/04**; A47L 13/22

(52) **U.S. Cl.** **401/137**; 401/138; 401/282

(57) **ABSTRACT**

The present invention concerns a broom provided with a regulator for controlling the flow of floor cleaning and treatment products.

Said broom is characterized in that a tubular appendage **(29)** provided on the bottom of a reservoir **(3)** for the discharge of liquid has an opening sufficiently large to allow it to be easily cleaned of incrustations and deposits that result from the use of dense or semi-dense fluids, such as floor waxes, and is structured continuously with the bottom of the reservoir **(3)**, so as to resist any interventions resulting from possible cleaning of the tubular section (FIG. **10**).



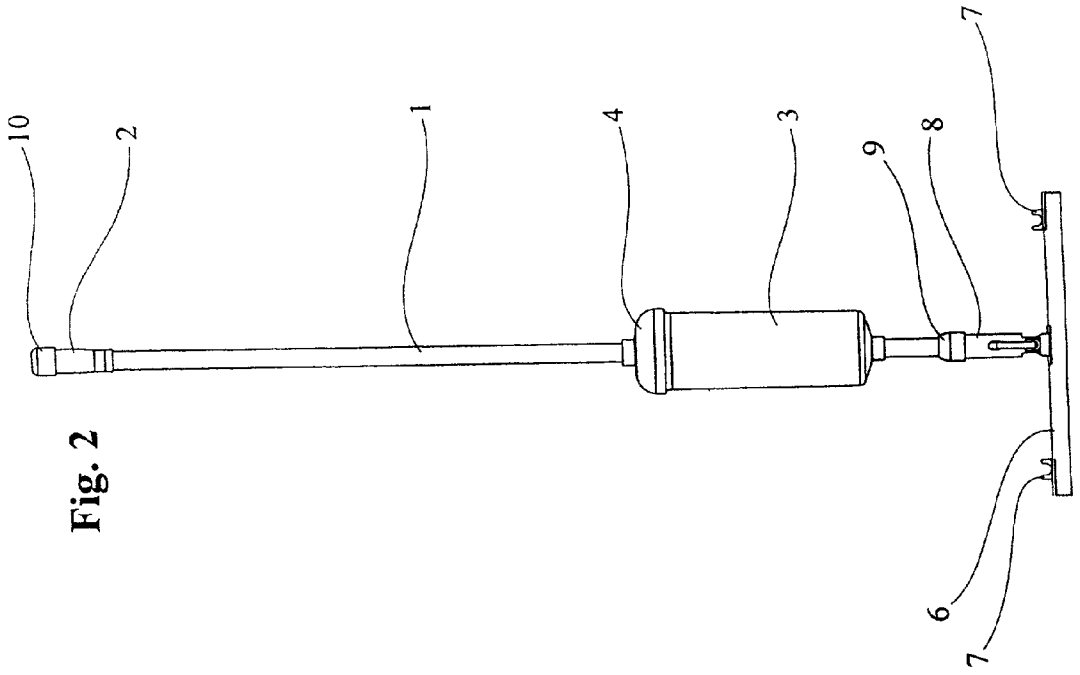


Fig. 2

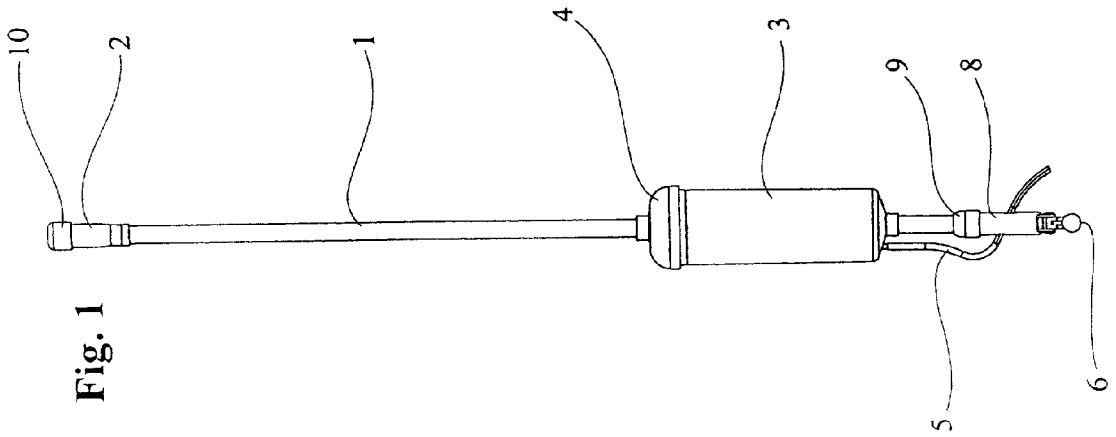
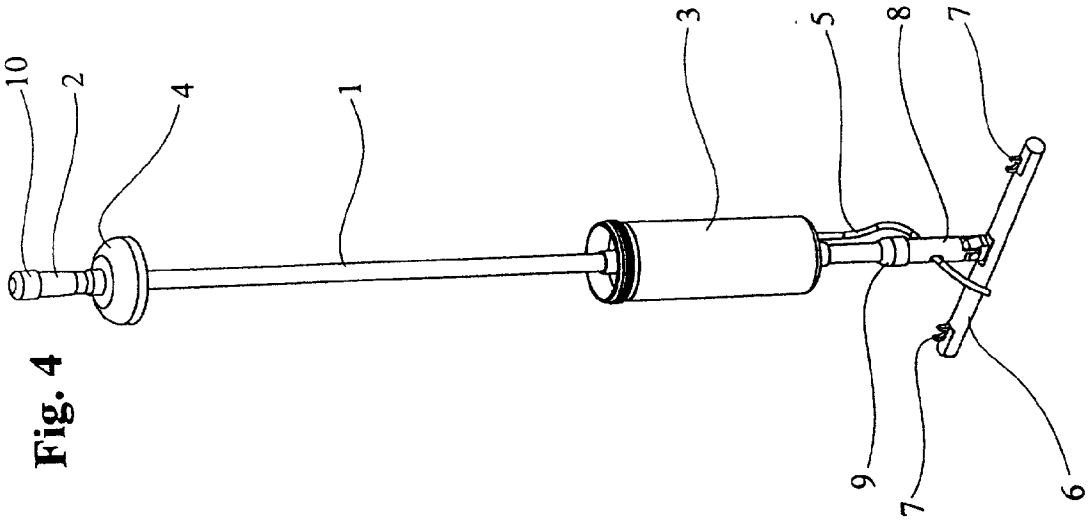


Fig. 1



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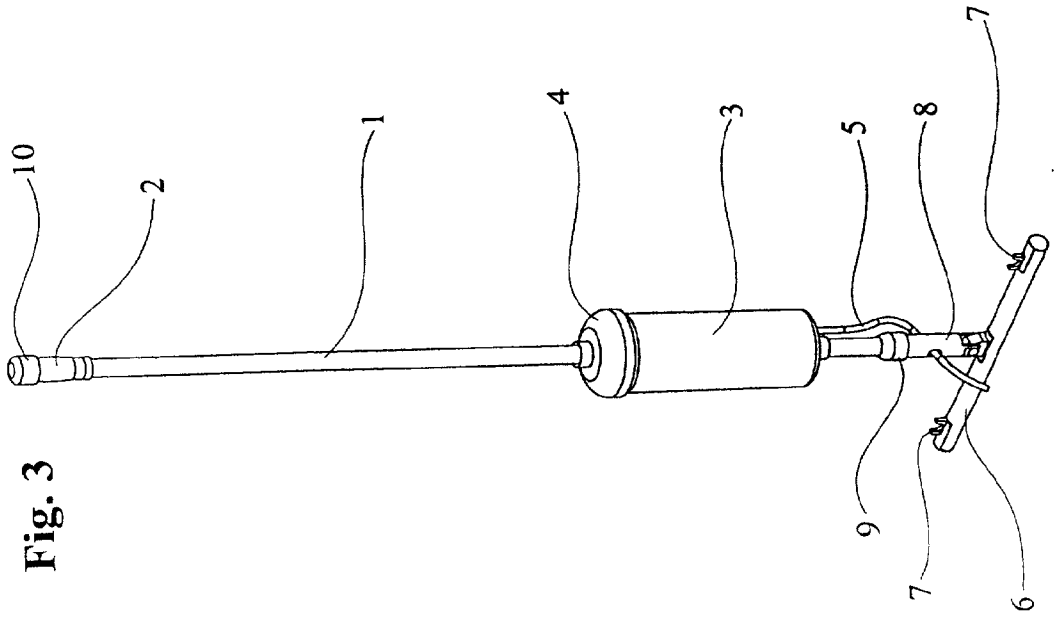

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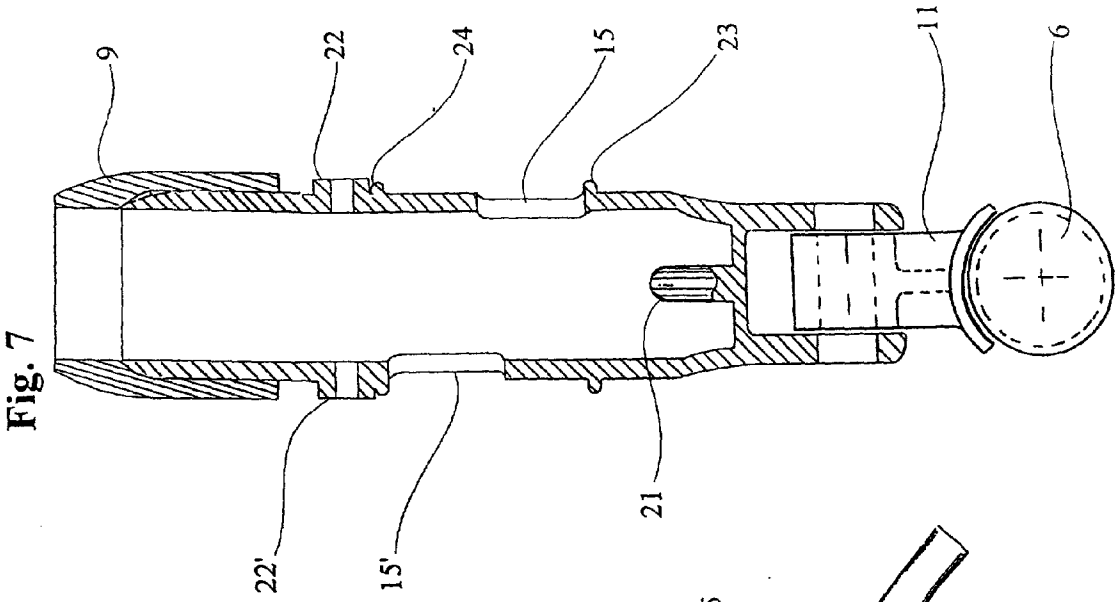


Fig. 7

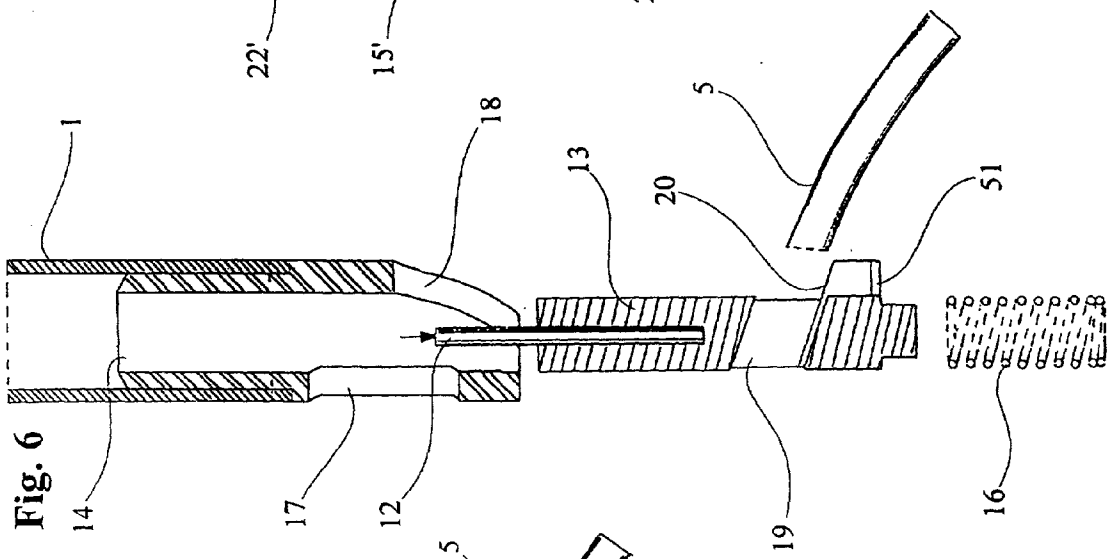


Fig. 6

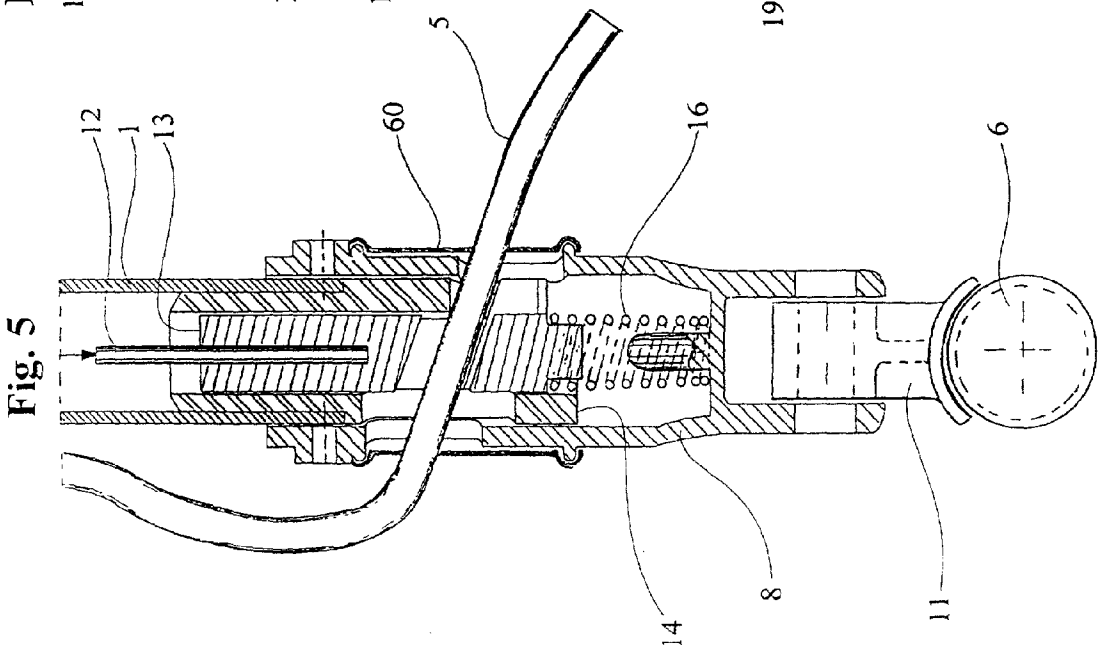
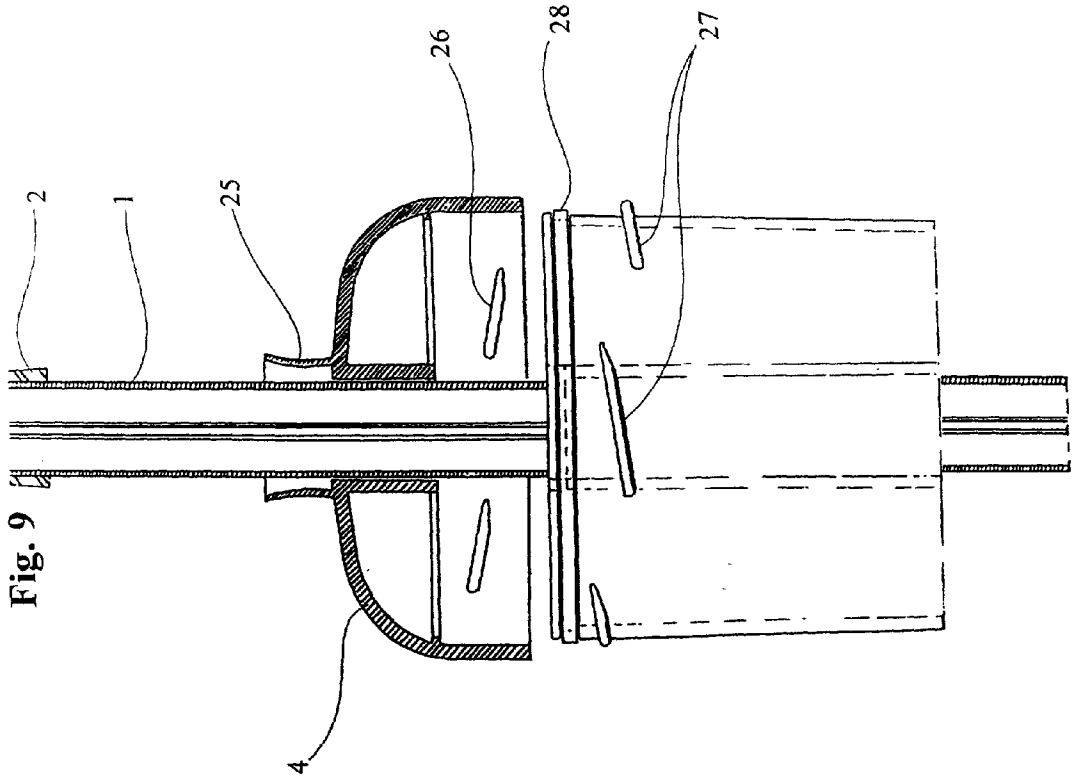


Fig. 5



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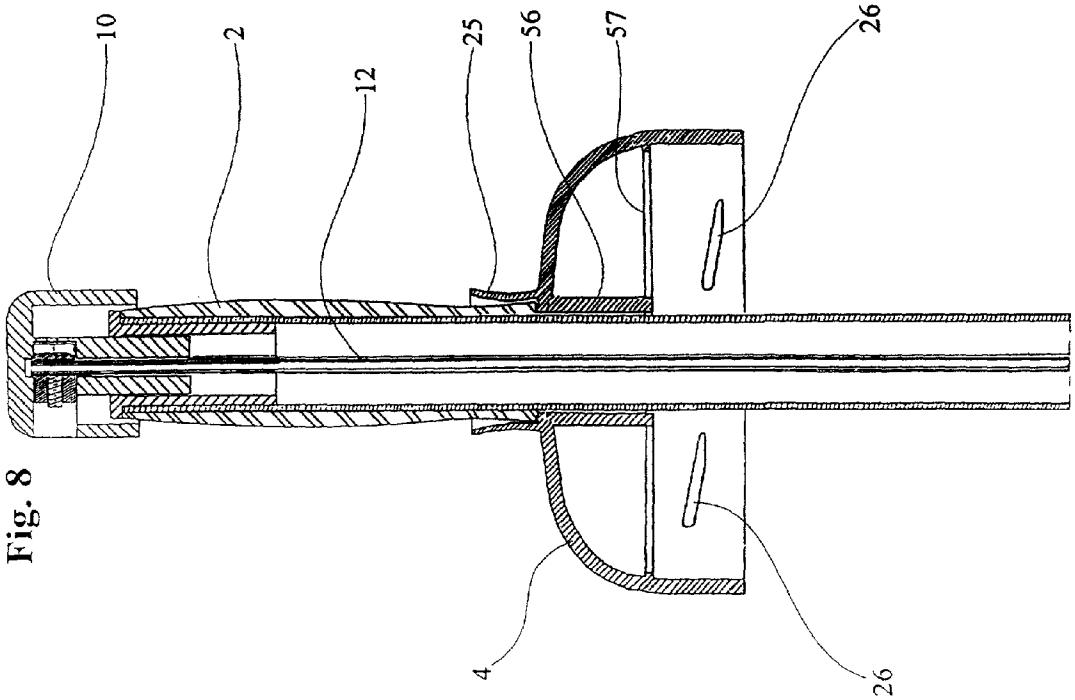
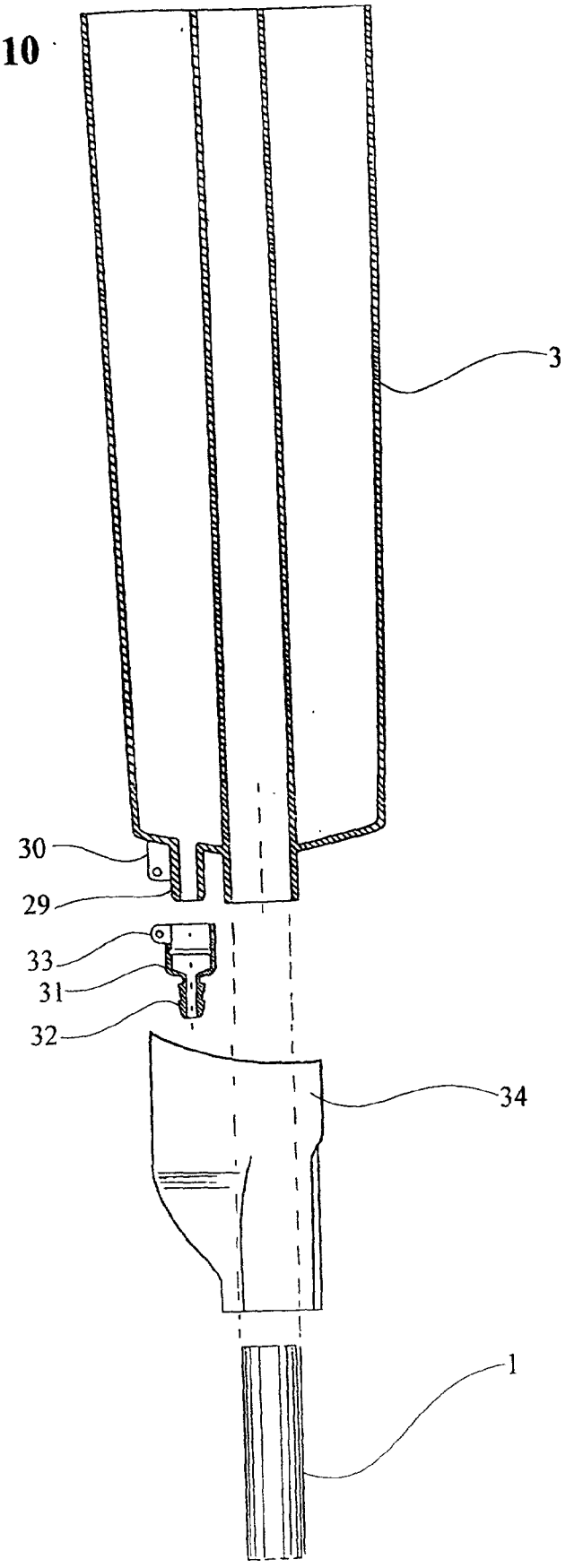
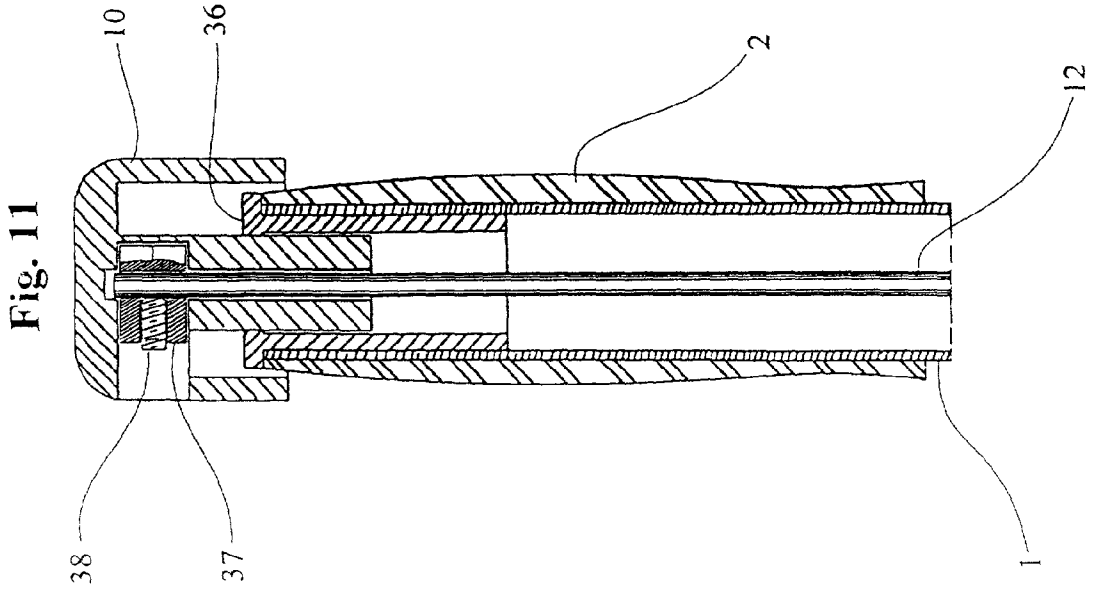


Fig. 8

Fig. 10





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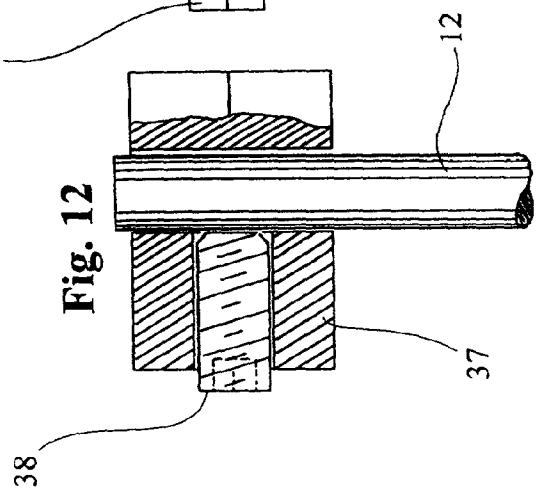

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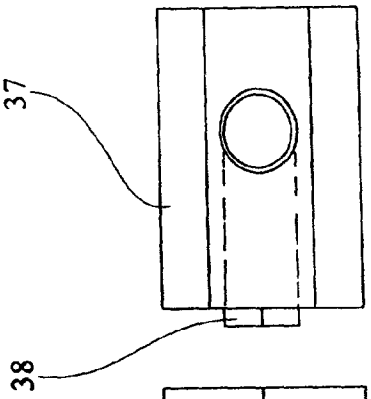

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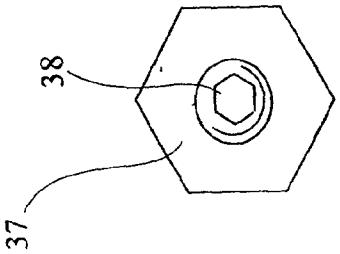

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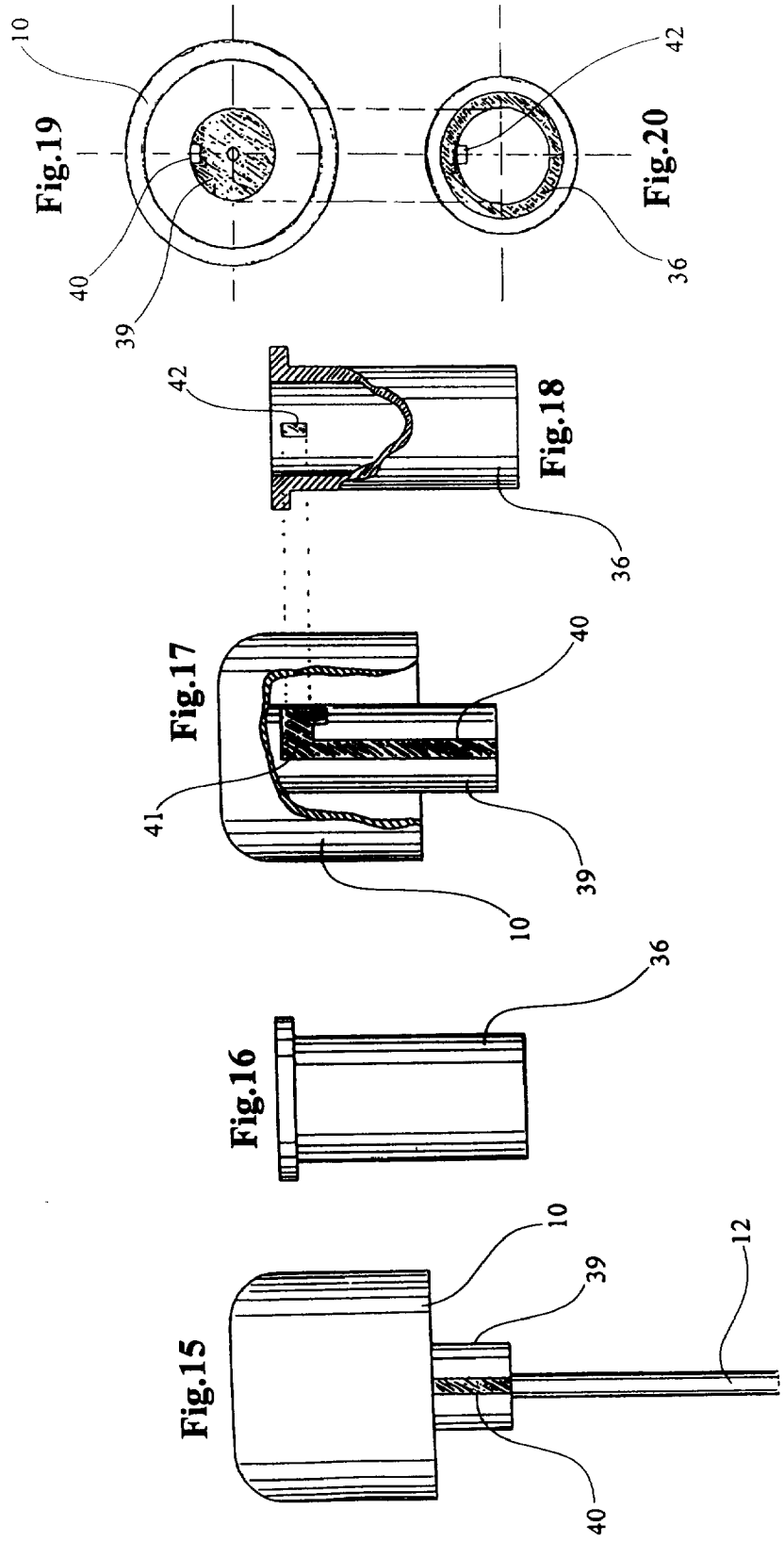
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Fig. 21

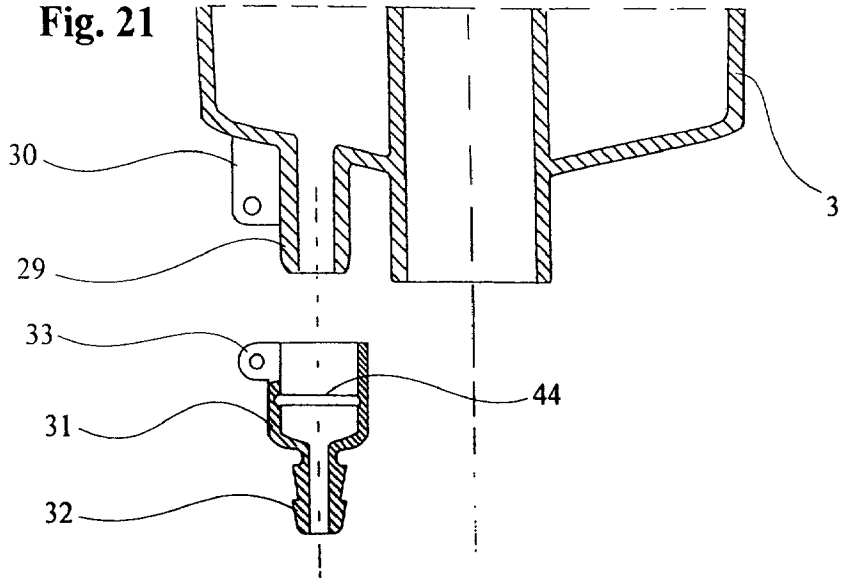
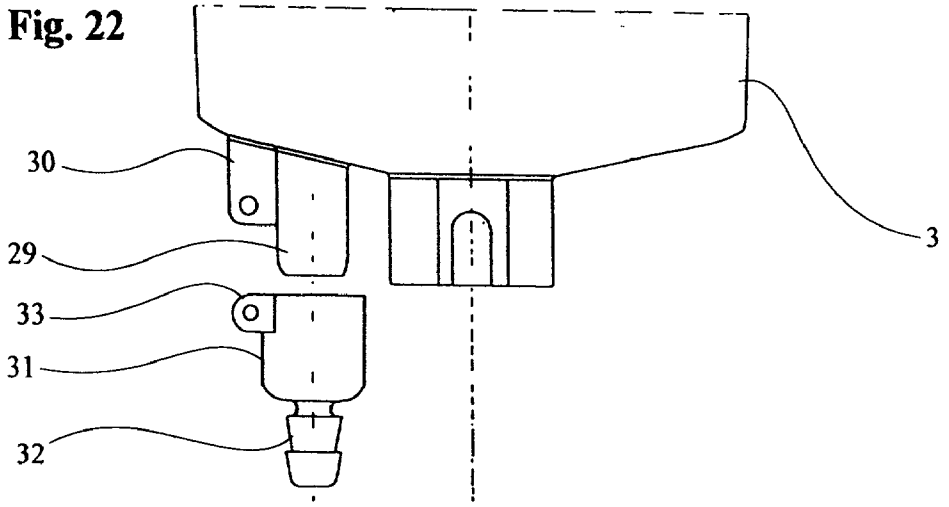


Fig. 22



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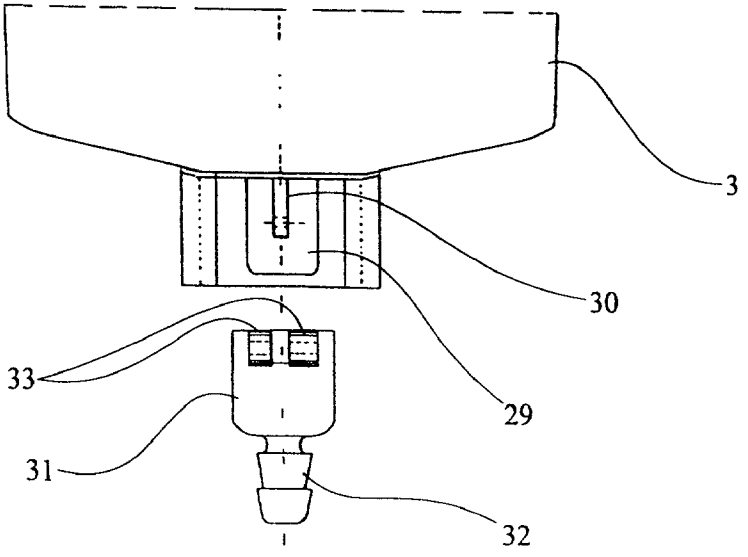

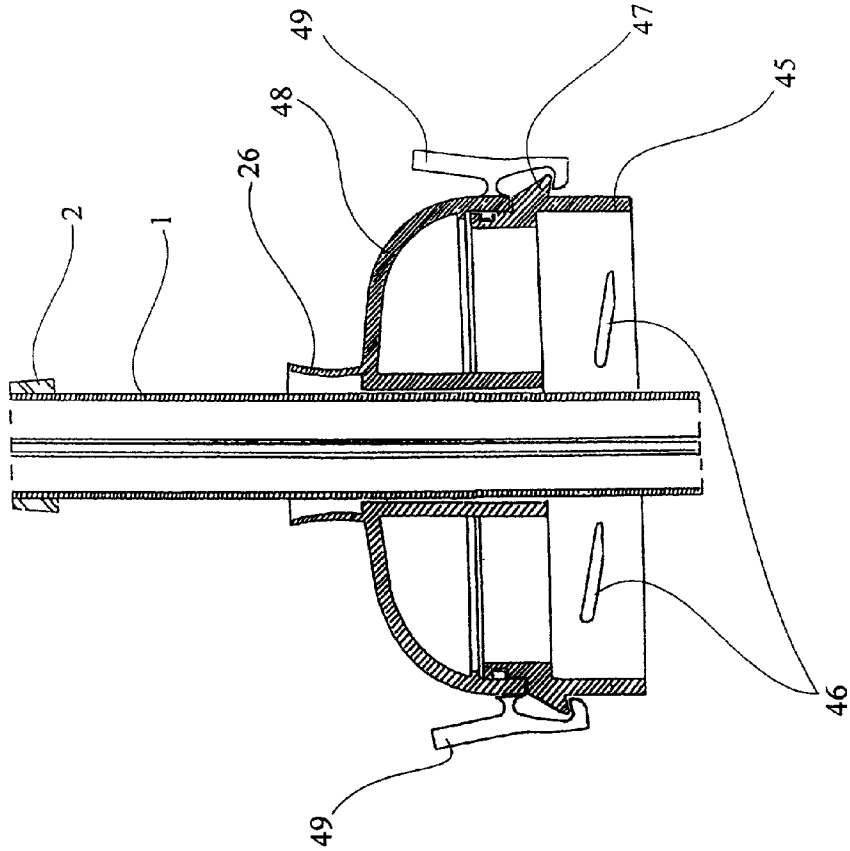

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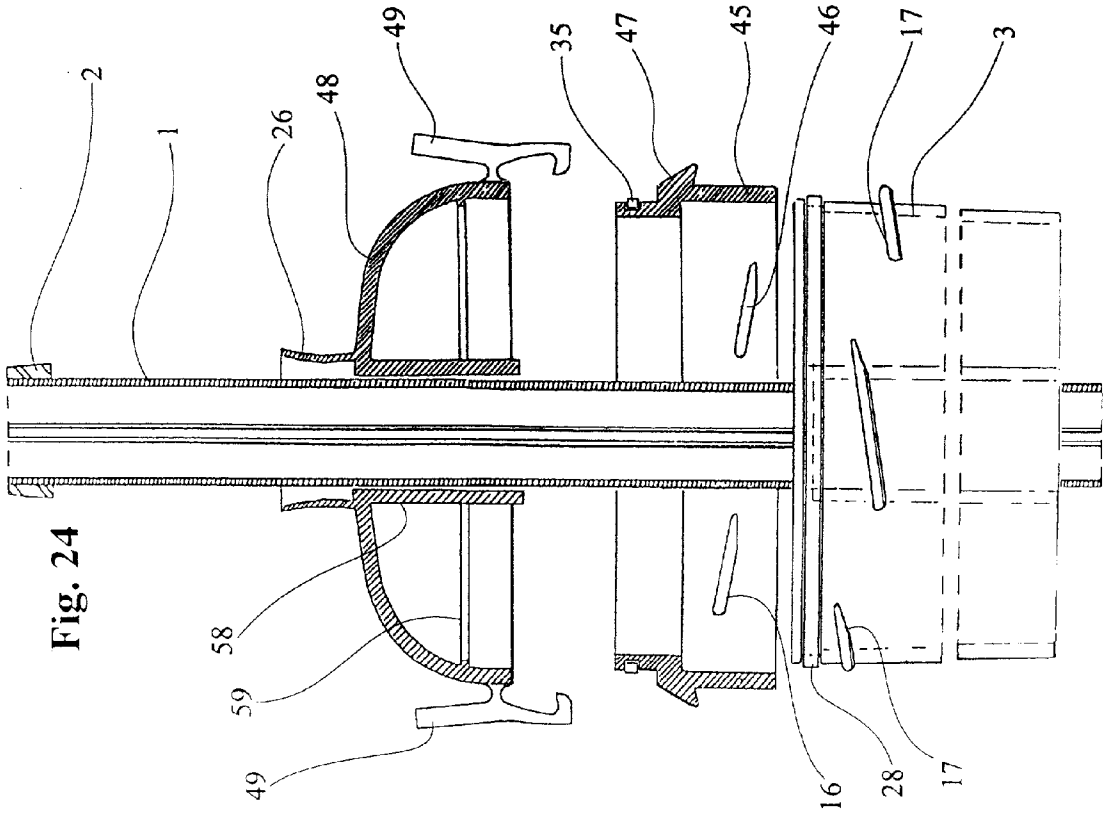
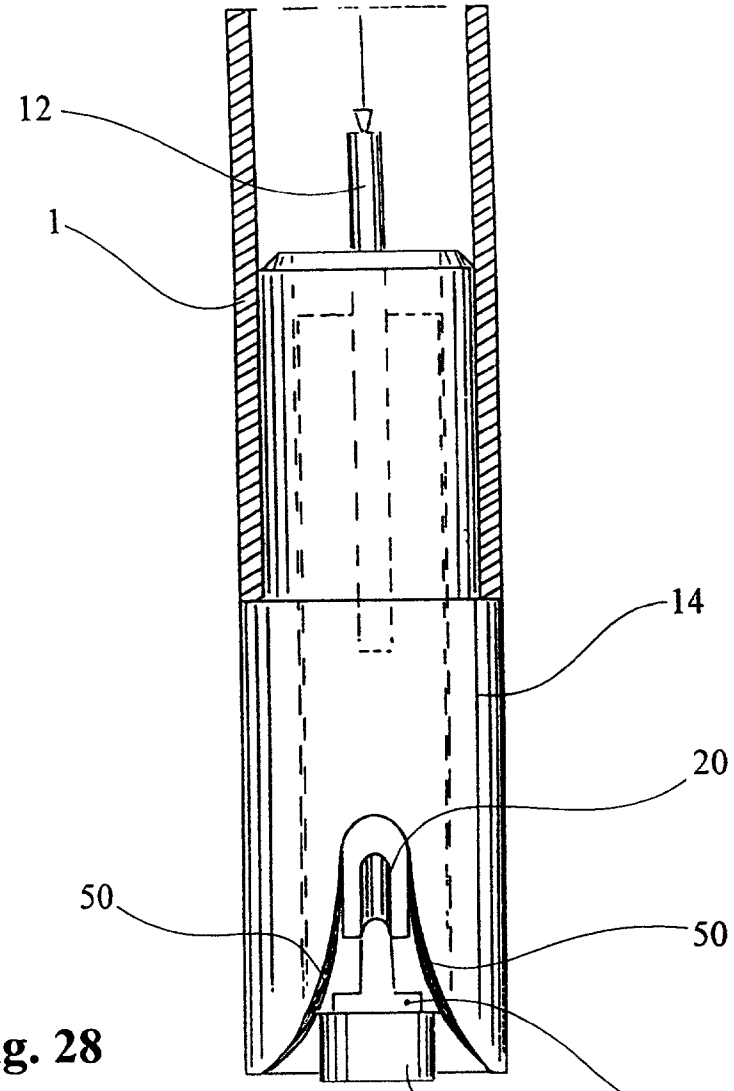


Fig. 24

Fig. 26



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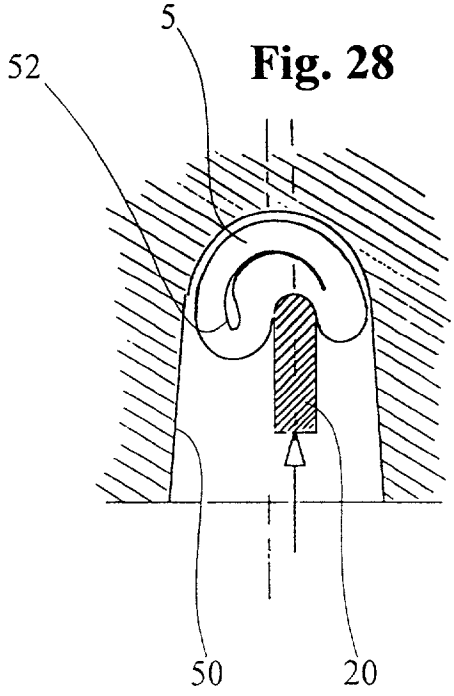

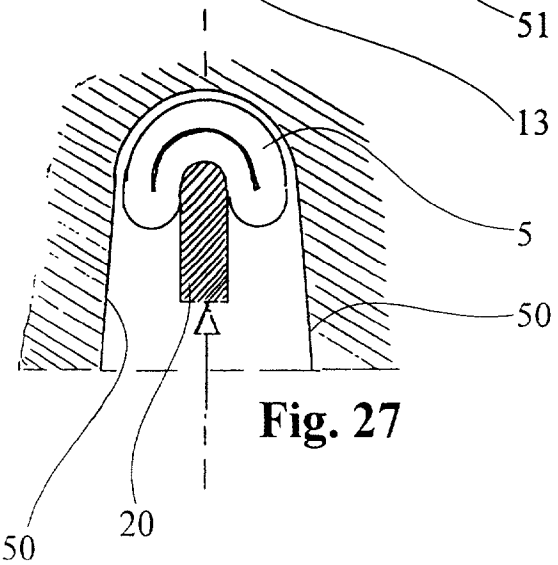

Fig. 27

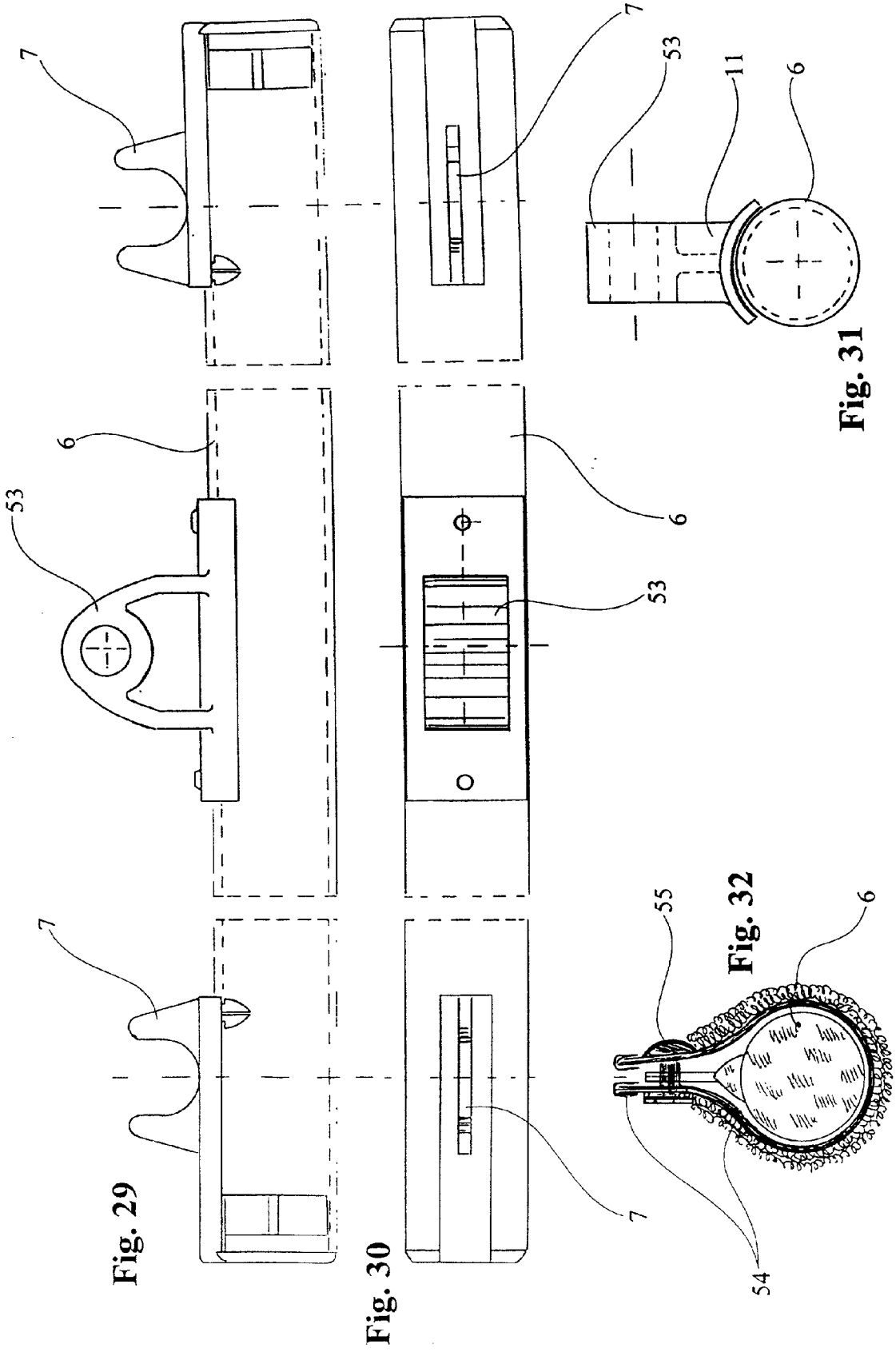

Fig. 29

Fig. 30

Fig. 31

Fig. 32

BROOM PROVIDED WITH A REGULATOR FOR CONTROLLING THE FLOW OF FLOOR CLEANING AND TREATMENT PRODUCTS

[0001] The present invention relates to a broom provided with a regulator for controlling the flow of floor cleaning and treatment products.

[0002] In the past, floors have generally been cleaned by hand, using mops. The sequence of activities comprised, respectively, washing, drying, and polishing. The materials involved included liquid detergents, pure water without additives, and wax emulsions.

[0003] In the case of large floor areas, the mop was used in conjunction with a stiff broom head. The original combination of mop and stiff broom head has been gradually perfected, resulting in true brooms, consisting of a shaft and a support provided with a shaft carrier and equipped, on its lower section, with suitably attached mop heads. The requisite amount of liquid (at the beginning of the process) or wax (at the end) were poured by the operator directly on the floor from various containers. They were then spread across the floor using mops or stiff brooms or a series of brooms equipped with a shaft and a support with an underlying softer element.

[0004] Because it was difficult to easily and uniformly spread detergents or polishing products over floors, brooms appeared on the market that were equipped with a bottle holder or their own reservoirs, which were connected either to the bottle holder or to attached reservoirs containing specific devices for regulating the flow of fluids (liquids, waxes, etc.) contained in those reservoirs.

[0005] Other brooms subsequently appeared on the market and these were provided with a reservoir mounted coaxially with respect to the shaft and connected, at the lower part of the reservoir, to a small flexible tube that descended toward the floor after traversing, at a certain distance from the floor, the shaft structure.

[0006] Among brooms now present on the market, stopping and regulating the flow of fluid contained in the reservoir, which passes through the small tube, is based on compression of the small tube, which is effected along a predetermined section of tube using appropriate means.

[0007] Control of the compression of the small tube is effected by acting on a control knob located on the top of the shaft, which, by means of a wire (using tension) or rod (using pressure), counterbalances the action of a spring, which, during the period the broom is not in use, maintains the small tube in a compressed state.

[0008] Brooms sold on the market having a reservoir mounted on the shaft, where regulation of the flow of liquid from the reservoir is realized through compression of a section of small tube made of a flexible material and connected to the lower part of the reservoir, are made as follows.

[0009] These brooms consist of:

[0010] a reservoir configured with an opening and mounted coaxially on the shaft, whose outside wall, extending the bottom of the reservoir, rises along the center part, forming a tube that surrounds the shaft

[0011] a small tube made of flexible material connected to a tubular appendage at the bottom of the reservoir and descending toward the floor, traversing the broom shaft

[0012] a shaft that supports a reservoir and is connected, by means of a pivot, to a base plate equipped with a piece of fabric

[0013] a control knob on the top of the shaft grip, which is connected to a device for compressing the small flexible tube where it crosses the shaft (or an extension of the shaft)

[0014] a spring activated device, which, when at rest, maintains the small flexible tube issuing from the reservoir in its fully compressed state at the point where it crosses the shaft (or an extension of the shaft)

[0015] a cover in the shape of an inverted cup, provided with a central tubular cavity running along the shaft.

[0016] The interior of the cover is provided with an edge designed to make contact with a corresponding outside edge of the reservoir.

[0017] The cover is provided with a skirt along the upper outer part, near the shaft.

[0018] The lower outer part of the cover is configured in such a way that, once the cover is lifted upward, it is elastically engaged by the lower part of the shaft grip and retained in place. This enables the operator to use both hands without having to hold the cover open while engaged in activities involving the mouth of the open reservoir.

[0019] To initiate the flow of liquid from the reservoir downward, the operator interacts with the control knob located on the top of the shaft grip by moving said control knob downward, whereupon the rod connecting the control knob to the device that compresses the small flexible tube where it crosses the shaft (or an extension of the shaft) is compressed. By varying the extent to which the control knob is depressed, the user can vary the compression of the rod, which acts proportionally against the spring of the device that compresses the small flexible tube.

[0020] Liquid spreading brooms available on the market, which have been previously described, present certain drawbacks that become apparent after a short period of use. These drawbacks render the broom itself unusable or result in fairly costly repairs to return the device to its original working condition.

[0021] These drawbacks result from the fact that products designed to be spread on a floor are not simple liquids but consist of wax emulsions, which lose some of their own solvent into parts of their containers or along the pathway leading to the floor or, as a result of polymerization problems, become so thick that they form colloid deposits or dense incrustations. This results in the obstruction of small openings and the gumming of joined parts whose function requires that they be separated.

[0022] Orifices must be cleaned with small rods to clear passages; joined parts that must be separated require the use of the appropriate tools since the force needed to unscrew threaded male and female elements is much greater than the force an operator can exercise manually.

[0023] These efforts at cleaning and removal or unlocking not only require more or less lengthy periods of time and related costs, but involve the risk of breaking the coupled parts themselves, which can render the entire broom dysfunctional.

[0024] One objective of the present invention is to supply a broom provided with a reservoir having a regulator for controlling the flow of liquid in said reservoir, in particular a fluid wax, which eliminates all the drawbacks found in currently marketed brooms equipped with a reservoir with a liquid flow regulator, by introducing innovative functional and structural concepts and also reducing production and handling costs.

[0025] Innovative solutions are introduced by the current patent to eliminate the above drawbacks.

[0026] The first innovation involves the discharge orifice provided on the bottom of the reservoir. Here it is realized, in continuity with the reservoir mold, by means of a robust tubular appendage equipped with a sufficiently large opening.

[0027] In the event of incrustations that are liable to obstruct the opening, this facilitates access to the opening and avoids the risk of breaking the tubular appendage, which would render the reservoir itself unusable. For attaching the small flexible tube that transports the liquid to the floor, a small tubular connector has been provided, which is removably nested on the extremity of the tubular appendage of the reservoir. The tubular portion of this small connector can be easily cleaned because it is possible to introduce a small cleaning rod from either end of the tubular section, or by following the short length of this tubular section. Even if the tubular appendage of the small connector should break, this poses no problem with respect to the broom because said small connector consists of an inexpensive replaceable part and, as an added precaution, a second connector can be supplied with the original broom.

[0028] The second innovation involves the mounting of the reservoir cover.

[0029] At present the cover, which is equipped with a central tubular cavity running along the length of the broom shaft, is attached to the reservoir by means of a threaded connection. According to the innovation introduced by the present patent, the cover is no longer screwed in place but pressed on with suitable force using appropriate means. Consequently, whenever the cover must be removed, even if incrustations should occur, causing it to stick to the reservoir, the user only needs to overcome frictional forces and only such force needs to be applied as is accessible to any user.

[0030] Appropriate means provided for securing the upper opening of the reservoir, using the non-screw cover, can be snap-on elements consisting of, for example, (elastically) rotatable articulated arms along appendages of the cover, which arms present a hook-shaped extremity for gripping associated appendages present on the outer surface of the reservoir.

[0031] Another innovation present in the current patent involves the fabric support, connected in oscillatory manner to an end of the shaft carrier. This support, generally cylindrical in shape, is covered with a wraparound mop on which the edges of the longitudinal opening are provided with snaps. To prevent the mop from slipping or turning around its cylindrical support when it is moved across the surface of the floor, this support is provided with rigid fins radially arranged along its upper surface of revolution, said fins being coplanar with the central stirrup together with the articulated connector joined to the fork-shaped extremity of the shaft carrier.

[0032] Another innovation involves the method of attaching the control knob, designed to control compression of the small flexible tube, on the upper extremity of the rod.

[0033] Currently, on existing brooms, the control knob and the upper extremity of the rod are attached by means of a screw engaged in the plastic of the control knob, said screw acting superficially on the rod axially threaded into the control knob by pressing it against the wall of the hole. In this way, the rod is secured by taking advantage solely of the mechanical adhesion between the wall of the hole in the control knob and the surface of the rod.

[0034] The movement transmitted from control knob to rod over relatively long periods of time compromises their mutual attachment as a result of the fragility of the threads in the plastic material of the control knob accommodating the transverse screw. The impossibility of procuring a secure connection, while eliminating possible sliding of the rod in relation to the screw exercising pressure, compromises efficient flow control through the small flexible tube because compression of the tube depends on perfect positioning of the rod. The solution to this problem was achieved by realizing a transverse cavity in the control knob, said cavity intersecting and terminating at the axial hole present in the control knob into which the rod is inserted. A locking element (preferably having a prismatic cross-section) is inserted into this cavity, having a transverse hole corresponding to the transverse cross-section of the rod and a threaded axial hole into which a screw is threaded.

[0035] When the rod is inserted into the control knob, it enters and extends beyond the transverse hole housing the locking element. Once the rod is in place in the correct position, the rod is tightened with the axial screw in the locking element so that this element becomes an integral part of the rod.

[0036] The coupling thus realized between the control knob and the rod is maintained because, with the locking element mounted on the extremity of the rod, a form of expansion is realized, which distributes the axial forces of the rod along the surface of the seat of the control knob in which the locking element is located.

[0037] This innovation facilitates the assembly of the various parts of the broom during construction as well as removal of the rod from the control control knob located on the top of the shaft whenever the broom needs to be cleaned or should any maintenance need to be performed on the broom, without compromising the quality of the coupling.

[0038] Another innovation concerns the manner in which the small tube is compressed. Whenever compression occurs, complete blockage of the flow of liquid in the reservoir is assured without any possibility of unwanted flow, which could be harmful during use of the broom or could cause the reservoir to drain when the broom is not in use.

[0039] To this end the invention proposes a small nose realized with the exact bend radius for the type of flexible tube to be compressed and ensures that the small nose compresses the flexible tube in the middle, without causing any asymmetry.

[0040] The small nose is centered on the flexible tube by realizing a prismatic coupling between the piston bearing the small nose and the sleeve in which the piston slides, or by enlarging the base of the rib whose summit forms the small nose, in such a way that, when it is near compression

position, this base automatically centers the nose by resting on the edges of the opening of the sleeve in which the piston slides.

[0041] Various embodiments of the present invention are described below, said non-limiting embodiments being provided for illustrative purposes only. The following descriptions refer to the attached drawings.

[0042] **FIG. 1** represents the broom seen from the side.

[0043] **FIG. 2** represents the broom seen from the front.

[0044] **FIG. 3** represents the broom in perspective view.

[0045] **FIG. 4** is the same representation shown in **FIG. 3** but with the reservoir mouth open and the cover in the up position, held in place by the lower part of the grip.

[0046] **FIG. 5** is a cutaway axial view of the compression assembly for the small flexible tube that drops from the reservoir and extends to the proximity of the floor, in front of the mop support. This drawing also shows the lower section of the shaft, equipped with a sleeve in which the piston, provided with a small nose, can move. When at rest this piston is pushed upward by a spring and during operation, it can be pushed downward, meeting the force of the spring, by means of a rod located inside the shaft and controlled by a control knob located on the top of the shaft. The device assembly consisting of the sleeve, small-nosed piston, and spring is contained within the shaft carrier by means of a pressure fitting and two transverse screws. As shown in the drawing, the shaft carrier, the sleeve connected to the shaft, and the small-nose piston are provided with corresponding openings for the passage of the small flexible tube. Compression of the small flexible tube is effected by the small nose of the piston, which, when urged upward, compresses it against the rim of the wall of the sleeve in which the piston slides.

[0047] **FIG. 6** is an exploded cutaway view of the disassembled elements, shown not in use and outside the shaft carrier, said elements constituting the assembly for compressing the small flexible tube and, in particular, the sleeve attached to the lower part of the shaft, the piston provided with the small nose that is connected to the manipulating rod, the spring that pushes the piston upward, and a portion of the small flexible tube intended to cross the openings in the shaft carrier, sleeve, and small-nose piston.

[0048] **FIG. 7** is an axial cutaway view of the shaft carrier provided with the pressure fitting and two passages for the transverse screws that ensure attachment of the sleeve to the shaft. The lower portion of the shaft carrier is in the shape of a fork and is connected to the underlying mop support by means of an axis that permits articulation of the support.

[0049] **FIG. 8** is a cutaway of the various elements constituting the upper part of the broom and, in particular, the cover of the reservoir retained by the shaft grip. This figure shows the shaft, the grip on the shaft, the sleeve with an external collar inserted into the upper part of the shaft, the control knob, whose hub slides inside the collared sleeve, and the manipulating rod attached to the control knob. The drawing also shows the interior of the cover, the mating elements that rest on the parts of the reservoir summit, and the threads for connecting with the corresponding threads provided on the upper outside surface of the reservoir. The center part of the cover has a tubular cavity whose wall, for all practical purposes, adheres to the shaft. The upper outside part of the cover, near the shaft, is provided with a skirted tubular appendage that ensures its elastic engagement with the lower part of the grip.

[0050] **FIG. 9** represents the cover separated from the shaft grip and situated near the mouth of the reservoir. The drawing also illustrates the threads that are provided on the upper outside surface of the reservoir to connect it to the cover.

[0051] **FIG. 10** is a cutaway view of the reservoir, a section of the shaft, a small connector that is inserted between the small flexible tube and the tubular appendage that is an integral part of the bottom of the reservoir, and a protective cap for the small connector and tubular appendage. The protective cap is mounted on the bottom of the reservoir and surrounds the shaft. The reservoir is made as a single piece and its outside tubular wall and the tubular wall of its internal cavity are joined at the bottom without any interruption in continuity.

[0052] **FIG. 11** represents the locking element arranged on the upper extremity of the control rod used to compress the small flexible tube and which is contained inside the control knob that sits on top of the shaft grip.

[0053] **FIGS. 12, 13**, and **14** represent, respectively, a cutaway, side view, and top view of the locking element mounted on the upper extremity of the rod, shown not in operating position, that is, outside the control knob.

[0054] **FIG. 15** represents the control knob on the top of the shaft, provided with the manipulating rod to control compression of the small flexible tube controlling the flow of liquid.

[0055] **FIG. 16** represents the sleeve with external collar that is engaged in the upper end of the shaft and in which slides the hub of the control knob connected to the manipulating rod.

[0056] **FIG. 17** represents the control knob of **FIG. 15** with part of the control knob partially cut away, illustrating the enlarged part realized in the upper part of the hollow present in the hub.

[0057] **FIG. 18** represents the sleeve of **FIG. 16**, partially cut away, illustrating the key that is engaged in the hollow of the control knob hub.

[0058] **FIG. 19** is a bottom view of the control knob shown in **FIG. 15**, illustrating the hollow that is present in the control knob hub.

[0059] **FIG. 20** is a bottom view of the sleeve shown in **FIG. 16**, illustrating the presence of the key.

[0060] **FIG. 21** is a large-scale cutaway of the lower portion of the reservoir, together with its tubular appendage and small tubular connector, before it is attached to the appendage, the small connector being supplied with a tip for attachment of the small flexible tube. The drawing also shows the fin with a hole in it, which extends from the tubular appendage of the reservoir, and the elastic fins, having holes, on the small tubular connector used to realize a solid connection between the small connector and the tubular appendage.

[0061] **FIG. 22** is the corresponding representation of **FIG. 21** seen from the outside.

[0062] **FIG. 23** is the corresponding representation of **FIG. 22** after it has been rotated 90 degrees.

[0063] **FIG. 24** is a representation of three parts in proximity, specifically, the upper part of a normal reservoir, an annular element, and a type of cover lacking threads. The three-piece assembly can be used to remove the cover while ensuring closure of the reservoir mouth, without having to unthread the assembly, whenever the liquids used might cause clogging and incrustations. The summit of the reservoir has an annular element whose interior is provided with threads and whose exterior with appendages or a connecting edge having a bottom-facing undercut. The cover lacks an internal thread and has, on its outer surface, at least two levers elastically articulated on this surface, whose lower arms have hook-shaped extremities. The attachment of the cover and the annular element does not require any reciprocal rotations but is achieved through translation of the cover, which, once pressed tightly against the summit of the annular element, remains securely joined to the appendages of the annular element by means of the small hook-shaped arms on the levers with which it is equipped. To remove the cover the user acts on the upper arms of the levers, rotating them in a direction opposite the previous tightening direction, the upper arms causing the lower arms to move outward, thus disengaging them from the appendages on the annular element.

[0064] **FIG. 25** is a drawing of the cover and the annular element in **FIG. 24** in their attached position.

[0065] **FIG. 26** is a drawing, seen from the front, of the small nose provided for compressing the small flexible tube (not shown in this drawing), which exits the opening present in the lower extremity of the sleeve connected to the shaft. The drawing also shows that said opening presents, in its uppermost portion, a semicircular profile corresponding to the outer diameter of the small flexible tube, which, as previously indicated, is not shown here, and which, after an initial section, increases near the bottom, its edges being curvilinear in shape. The drawing also shows, at the base of the rib whose upper part constitutes the small nose, the saddle, whose sides come into contact with the edges of the opening of the sleeve as it moves upward, thus centering the small nose within the semicircular profile that defines the summit of the sleeve opening. Because of this embodiment of the sleeve opening and use of the saddle at the base of the rib constituting the small nose, the control knob located at the top of the shaft (when engaged by means of the enlarged portion of its hollow with the key in its respective sleeve) can be turned without applying excessive torsion to the rod, whose lower part is connected to the piston provided with the small nose.

[0066] **FIG. 27** illustrates the manner in which the small flexible tube is compressed by the small nose against the edge found at the top of the opening of the sleeve joined to the shaft whenever the small nose is centered. The illustration shows that the interior wall of the small flexible tube presses against itself in uniform fashion, which results in complete closure of the tube.

[0067] **FIG. 28** illustrates the manner in which the small flexible tube is compressed by the small nose against the edge on top of the opening of the sleeve connected to the shaft whenever the small nose is not centered. The illustration shows the asymmetrical deformation of the small flexible tube. The interior wall of the small flexible tube is not completely compressed against itself, leaving a slight opening. Such an opening, even when very small, allows the escape of liquid, which flows down from the reservoir, resulting in obvious operating problems, including unwanted discharge of the reservoir when the broom is not being used or is being stored.

[0068] **FIG. 29** is an elevation view of the mop support. It shows that the support comprises two fins on the sides that rise from the top and assume the same position as the stirrup provided for attaching the shaft carrier. A part of each of the fins is reduced in height in the center to provide a passage for the male stud used to secure the mop. The fins serve to prevent the mop, once wrapped and snapped in place, from turning or moving in translation with respect to the support.

[0069] **FIG. 30** is a top view of the corresponding mop support shown in **FIG. 29**.

[0070] **FIG. 31** is a side view of the mop support shown in **FIG. 29**.

[0071] **FIG. 32** is a schematic representation that illustrates how the snap system for securing the mop around its support is realized with respect to the openings present in the fins.

[0072] The drawings illustrate shaft **1**, grip **2** mounted on the shaft, liquid reservoir **3** mounted on the shaft, reservoir cover **4**, the small flexible tube **5**, which is connected to reservoir **3** and which descends, after having crossed shaft carrier **8**, toward the floor, mop support **6**, fins **7** on this support, whose function is to prevent translational and rotational movement of the mop on support **6**, shaft carrier **8**, gripping sleeve **9** on shaft carrier **8**, control knob **10** arranged on the top of the shaft and connected to manipulating rod **12**, stirrup **11** connected to the mop support to enable the articulated coupling of said support with the end fork on shaft carrier **8**, rod **12**, which connects upper control knob **10** to piston **13** and whose depression reduces, or relieves, the compression of small flexible tube **5** when it encounters the upward thrust of spring **16**, sleeve **14** attached to the lower extremity of shaft **1** and in which piston **13** equipped with small nose **20** slides, opposed openings **15** and **15'** formed in the wall of shaft carrier **8**, opening **17**, formed in sleeve **14**, profiled opening **18**, formed in sleeve **14**, and which is opposite opening **17**, opening **19**, formed in piston **13** having small nose **20**, small nose **20** of piston **13**, which, following the upward thrust of spring **16** on piston **13**, is pressed against the summit of edge **18** of the opening created in sleeve **14**. When small flexible tube **5** is introduced in openings **17** and **19**, it is compressed, in its state of rest, by small nose **20** of piston **13**, against the summit of edge **18** of the wall of sleeve **14**.

[0073] The drawings also show projection **21**, which rises from the bottom of the interior of the shaft carrier and which helps guide the lower part of spring **16**, two diametrically opposed passages **22** and **22'** for the insertion of screws that serve, together with sleeve **9**, to attach sleeve **14** to shaft carrier **8**, and two external projections **23** and **24**, which extend circumferentially around shaft carrier **8** for attachment of elastic sleeve **56**, ensuring protection against dirt entering openings **15** and **15'**.

[0074] The drawings also show skirt **25**, present on the upper outside part of the reservoir cover, near the shaft, thread sections **26**, present on the lower inside surface of the cover, for attachment to the threaded sections on the upper outside surface of the reservoir, support seal **28**, on the exterior, near the upper rim of the reservoir, tubular appendage **29**, located on the outside of the bottom of reservoir **3**

and designed to be capped by small tubular connector **31**, provided with appendage **32** for attaching small flexible tube **5**, fin **30**, equipped with a hole, which extends laterally from tubular appendage **29** and which is designed for engagement, through compression and retention by a screw, between two elastic fins **33**, which extend laterally from small connector **31**, protective cap **34** of tubular appendage **29** and small connector **3**, and its related appendage **32** for support of the initial part of small flexible tube **5**, O-ring seal **35**, which is applied in the vicinity of the upper rim of the exterior of annular element **45**, external collar sleeve **36**, engaged with the top of shaft **1**, hub **39** on control knob **10** that slides in sleeve **36**, key **42** of sleeve **36**, which is engaged in hollow **40** in hub **39** of control knob **10**, enlarged part **41** of hollow **40**, in which key **42** can enter, through rotation of control knob **10**, to maintain control knob **10** in its depressed position once so engaged.

[**0075**] The drawings also illustrate locking element **37**, having a prismatic cross-section and a transverse hole for passage of rod **12** and a threaded axial hole for the insertion of screw **38**, which is used to lock rod **12**, seal **44** inserted into the corresponding groove inside small connector **31**, annular element **45**, designed to be applied to the summit of reservoir **3** to achieve attachment by pressure, rather than by screw connection, to cover **48**, thread sections **46** on the inner surface of annular element **45**, intended to engage with corresponding thread sections **17**, present on the upper outside surface of reservoir **3**, circular projection **47**, beveled on its upper part and undercut on its lower part, and forming part of annular element **45**, elastically articulated levers **49** on the outside surface of cover **48**, whose small lower arm terminates in a hook that is engaged with the edge of the undercut in annular element **45**, while the small upper arm serves to prevent hooking the small lower arm in place.

[**0076**] Cover **48** is closed by snapping it in place, which is accomplished by pressing the cover against annular element **45**. The cover is removed by acting on the small upper arms of levers **49** and applying an upward force to cover **48**.

[**0077**] The drawings also show profiled edges **50** of opening **18** present in the lower region of sleeve **14**, enlarged saddle **51** from which rises the rib whose upper part forms small nose **20**, residual opening **52** of the internal passageway of small flexible tube **5** whenever it is asymmetrically compressed, upper part **53** of saddle **51** joined to mop support **6** and which penetrates the fork at the extremity of shaft carrier **8** to realize an articulated coupling, wraparound mop **54**, surrounding the broom support and whose edges are provided with snaps **55** arranged in the reduced-height portion of fins **7** on support **6**, internal tubular part **56** of cover **48**, which, by means of an annular seal arranged on the shaft (not shown), is retained by means of the upper part of the tubular element of the reservoir that surrounds the shaft, a circumferential projection **57** on the inner surface of cover **48**, which arrests its descent when screwed on, tubular internal part **58** of cover **48**, which, by means of an annular seal arranged on the shaft (not shown) secures the upper part of the tubular element of the reservoir surrounding the shaft, and projection **59**, on the inner surface of cover **48**, which arrests the motion of said cover against annular element **45**.

[**0078**] The above description reveals the innovativeness that characterizes the present invention, which should be understood as describing and representing only one example of a preferred embodiment of the invention. The present patent does not exclude any variants or improvements those skilled in the art might realize by means of the teachings based on the inventive concept embodied in this patent.

1. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, characterized in that a tubular appendage **(29)** on the bottom of the reservoir **(3)** for liquid discharge has a hole sufficiently large to facilitate removal of any incrustation or deposits that may result from the use of dense or semi-dense fluids such as floor waxes, and structured continuously with the bottom of the reservoir **(3)** so as to resist any interventions resulting from possible cleaning of the tubular section.

2. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, according to claim 1, characterized in that a small connector **(31)**, mounted on the tubular appendage **(29)** provided on the bottom of the reservoir **(3)**, is provided with an appendage **(32)**, whose dimensions are such that a small flexible tube **(5)** used for the discharge of liquid contained in the reservoir can be inserted.

3. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, characterized in that the small nose **(20)**, which compresses the small flexible tube **(5)** for regulating or stopping the flow of liquid, is configured in such a way that, whenever it is nearly compressed, it is automatically centered on the edges **(50)** of the opening **(18)** of the sleeve **(14)** in which it moves so as to symmetrically compress the small flexible tube **(5)** against the edge of the vault of the opening **(18)** and prevent possible leakage of fluid through the small tube.

4. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products according to claim 3, characterized in that whenever the small nose **(20)** is not compressing the small flexible tube **(5)** that serves to discharge liquid from the reservoir **(3)**, it can be displaced transversally with respect to the edges **(50)** of the opening **(18)** of the sleeve **(14)**, by allowing small torsion-free rotational movements of the rod **(12)** connected to the control knob **(10)** whenever said control knob **(10)** is placed in a position such that the enlargement **(41)** of the hollow **(40)** in its hub **(39)** falls opposite the key **(42)** present in the sleeve **(36)** into which the hub **(39)** is inserted.

5. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, characterized in that the attachment of the upper extremity of the rod **(12)** to the control knob **(10)** is realized by means of a locking element with a prismatic cross-section **(37)**, which is tightened by a screw **(38)** inserted in a hollow associated with the control knob.

6. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, characterized in that closure of the reservoir mouth is realized by means of a cover that is pressed against the mouth, said cover **(48)** (or the upper outside surface of the reservoir **(3)**) being provided with respective locking elements **(49)** and the upper outside surface of the reservoir **(3)** (or the outside surface of the cover **(48)**), with respective appendages **(47)** that facilitate the closure of locking elements **(49)**.

7. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products according to claim 6, characterized in that normal reservoirs **(3)**, provided with threads, are equipped with associated annular elements **(45)** that are internally provided with threads for screwing and externally, with appendages **(47)** for locking, whereby a mouth can have an opening capable of being closed by means of a cover **(48)** that is applied under pressure and provided with locking elements **(49)**.

8. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, characterized in that the mop **(54)** support **(6)** is provided with rigid fins **(7)** that are coplanar with the stirrup **(11)** provided for attachment of the shaft carrier **(8)** and which prevent rotation of the mop **(54)** around its support **(6)**.

9. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products according to claim 8, characterized in that the fins **(7)** are reduced in height throughout their central region to enable passage of snaps **(55)** on the mop **(54)**, thus avoiding translation of the mop **(54)** with respect to its support **(6)**.

10. Broom provided with a regulator for controlling the flow of floor cleaning and treatment products, characterized in that it comprises an elastic sleeve applied to the shaft carrier **(8)** opposite the region crossed by the small flexible tube **(5)** and which prevents debris from entering the openings in the shaft carrier.

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