(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 September 2009 (03.09.2009)

PCT

(10) International Publication Number
WO 2009/108952 A1

(51) International Patent Classification:
A46B 11/06 (2006.01) *A46B 15/00* (2006.01)
A46B 11/00 (2006.01)

(21) International Application Number:
PCT/US2009/035776

(22) International Filing Date:
2 March 2009 (02.03.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/032,900 29 February 2008 (29.02.2008) US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

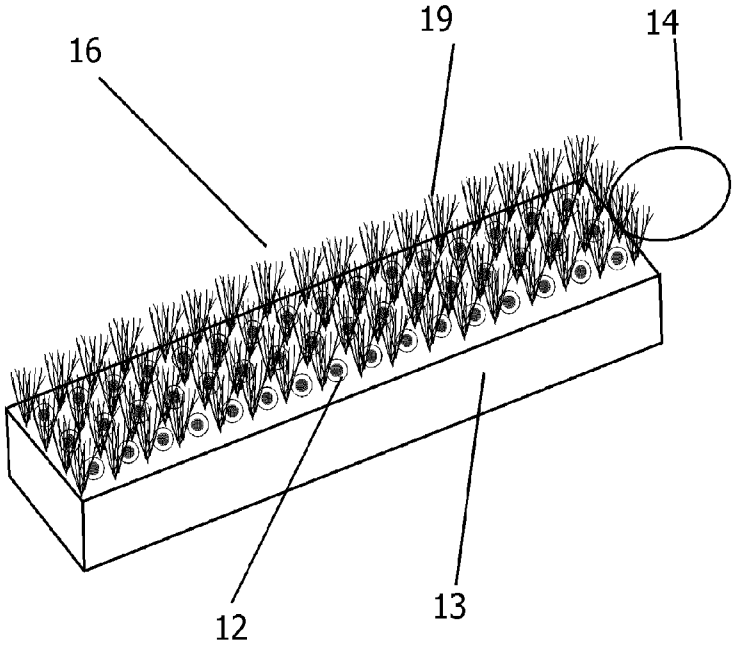
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

[Continued on next page]

(54) Title: FINGERNAIL SCRUBBING DEVICE



(57) Abstract: A sink and/or faucet mounted fingernail scrubbing device for effective, inviting and/or hygienic means of cleaning fingernails, a crucial aspect of thorough hand washing for disease prevention. The device includes a plurality of bristles, liquid port holes, and a user sensing mechanism operationally connected to a liquid supply assembly. In an embodiment of the invention the user sensing mechanism allows liquid to flow through the brush bristles as the user's hands come near and/or touch the brushes.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

FINGERNAIL SCRUBBING DEVICE

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PRIORITY CLAIM

[0001] The present application claims priority from U.S. Patent Application Serial No. 60/032,900 filed February 29, 2008, which is herein incorporated by reference.

FIELD OF THE INVENTION

[0002] This invention relates generally to devices to improve personal hygiene and/or more specifically to a sink and/or faucet mounted brush to improve fingernail and/or fingertip and/or cuticle cleaning.

BACKGROUND OF THE INVENTION

[0003] According to the CDC (Centers for Disease Control and Prevention), the single most optionally advantageous thing we can do to keep from getting sick and/or spreading illness to each other is to wash our hands.

[0004] Effective hand washing should include fingernail scrubbing. Studies have shown that hand washing which includes fingernail and/or cuticle scrubbing is significantly more effective at removing germs than hand washing without a scrub brush and/or other means of uncommon fingernail and or cuticle cleaning. This is because fingernails and/or cuticles provide the best germ harborage and/or are the hardest to clean.

[0005] It has long been recognized that thorough hand washing reduces the spread of infections and/or other diseases. Considerable research in a wide variety of settings; hospitals, day care centers, commercial food establishments and/or private homes, to name just a few, repeatedly demonstrate the value of this practice.

[0006] Foreign substances and/or germs are particularly likely to congregate under the fingernails. For this reason fingernail cleaning is recommended as a critical part of thorough hand cleaning.

[0007] Hand held fingernail brushes are not convenient to use and/or may be poorly cleaned between uses. The prospect of spending additional time and/or effort locating, perhaps cleaning and/or taking up the scrubbing brush in each hand in turn may

discourage its regular use and/or the development of a habit, especially if the time available for thorough hand washing activity is perceived to be of short duration.

[0008] What is necessary is a fingernail scrubbing device suitable for any sink, tub, spa and the like, attached to a sink or sink faucet as an aftermarket installation or as an integral part of the sink or faucet during manufacturing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Preferred and alternative embodiments of the present invention are described in detail below with reference to the following drawings.

[0010] FIGURE 1 is a perspective view of the improved fingernail brush assembly.

[0011] FIGURE 2A is a top view of the sink indicating the brush assembly's placements on the faucet and/or the inside vertical surfaces of the sink itself.

[0012] FIGURE 2B is a front view of the sink which further clarifies the brush assembly's placement on the faucet and/or the inside front vertical sink surfaces.

[0013] FIGURE 3A is a front view of the faucet adaptor assembly that provides liquid to the fingernail brush assembly mounted on the faucet.

[0014] FIGURE 3B is a cross sectional view of the previously illustrated faucet adaptor assembly through the slip ring section that allows the brush assemblies to be adjusted relative to the front faucet surface.

[0015] FIGURE 4 is a top view of the improved fingernail brush assembly bolted to a vertical sink surface.

[0016] FIGURE 5 is a front view of the liquid water line adaptor assembly that provides liquid water to the fingernail brush assembly mounted on the vertical sink surface(s).

[0017] FIGURE 6 is a back view of the liquid water line adaptor assembly that indicates its placement incorporated into the hot and/or cold liquid water supply lines for the faucet.

[0018] FIGURE 7 is a top view of a different version of the improved fingernail brush assembly bolted to a vertical sink surface.

[0019] FIGURE 8 is a back view of a sink faucet assembly that indicates an alternative liquid water supply source for the brush assembly bolted to a vertical sink

surface.

[0020] FIGURE 9A shows side and/or front views of a splash guard that can be attached to the fingernail brush assembly.

[0021] FIGURE 9B is a perspective view of the splash guard which clarifies its attachment to the fingernail brush assembly.

[0022] FIGURE 10A is a perspective view of the manner in which an optional sanitizing compound stick can be inserted into the liquid water tank base of the brush.

[0023] FIGURE 10B is a side view of the fingernail brush assembly which more clearly indicates the nature of the chamber into which the optional sanitizing compound stick is placed.

[0024] FIGURE 11 is a front view of the version of the *improved* fingernail brush assembly that uses suction cups for quick placement and/or removal of the device in a variety of locations.

[0025] FIGURE 12A is the top view of a hand sink with a lip across the user side, above the fingernail brush assembly with the ends of the bristles visible beyond the lip. Also shows the connector and the barbed section.

[0026] FIGURE 12B is an elevation view of a hand sink showing the fingernail brush assembly attached to a mounting plate. The mounting plate is fastened to the inside of the sink surface. A lip with a perforated pipe underneath overhangs the fingernail brush assembly.

[0027] FIGURE 13A is a top view of the brush assembly showing a connector with a threaded end a barbed end and a nut and washer for holding it in place on the sink when no mounting plate is used. The fingernail brush assembly has perforations from reservoirs to ports. Each reservoir has a plug. A mounting plate and gasket are also shown.

[0028] FIGURE 13B is a back view of the fingernail brush, opposite the bristle side, showing the fluid reservoirs and/or the connector with threaded sleeve and/or nut and/or washer. Also shown are plugs in the ends of the fluid reservoirs.

[0029] FIGURE 14 is a plan view of the system that supplies water and/or additive compounds to the fingernail brush assembly through the barbed connector

section. There are two additive compound reservoirs, pipes to connect them to a pump and a water supply pipe with a backflow preventer.

[0030] FIGURE 15 is an exploded view of the connector with a threaded end, a hex shoulder, a barbed end and a threaded shaft. A nut and washer are needed to attach the connector to the sink and a pipe with clamp attaches to the barbed end..

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0031] A preferred embodiment of the invention is a fingernail scrubbing device consisting of bristles, a user sensing mechanism, a liquid supply subassembly and/or one of several means of mounting the device. One exemplary embodiment of the invention can be attached to, for example, a faucet spout's aerator receiver by a variety of attachment means not limited to a threaded adapter and/or a slip ring circumference clamp. Alternately the preferred embodiment of the invention can be attached to an inside vertical surface of a sink itself, by a variety of attachment means not limited to, a machine screw, suction cups, adhesive, threaded fasteners, clamps or other standard types of fasteners. The fingernail brush assembly can be, but is not limited to, incorporated into the faucet or into the sink as part of the original manufacturing process.

[0032] The incorporation of a sensing mechanism into the device preferably can start liquid flow to the assembly, for example water, flowing through the brush bristles as a user actuates the mechanism, for example by placing hands near the brushes and/or by touching the brush bristles.

[0033] In another exemplary embodiment a embodiment of the fingernail scrubbing device can be be mounted in multiples, so that the fingernails and/or cuticles of both hands can be cleaned simultaneously for convenience and/or to further encourage the use of the device by people in a hurry. It is further contemplated that the brush assembly can be removed when the bristles wear out and/or need replacement.

[0034] In another embodiment a fingernail scrubbing device consisting of bristles, a liquid supply subassembly, and/or one of several means of mounting the device, includes a user sensing mechanism and/or one and/or more reservoirs for the addition of sanitizing and/or cleaning compounds to the water and/or, for use without water. Fluids, including water, can be supplied to the bristles through perforations in the brush base and/or through a perforated pipe and/or spray nozzles and/or another water

dispensing mechanism that is and/or are attached to, and/or are part of the sink.

[0035] As an exemplary "aftermarket" application, the device can be attached either to the faucet spout's aerator receiver with a threaded adapter and/or a slip ring circumference clamp, or to the inside vertical surface and/or surfaces of the sink itself, with a fastening means, including, but not limited to a machine screw and/or other threaded fasteners, a suction cup and/or suction cups, adhesive, a clamp and/or clamps and/or anchor fasteners and/ or another other kinds of fasteners standard types of fasteners. The means of mounting the fingernail brush assembly can also be incorporated into either the faucet and/or the sink as part of the original manufacturing process.

The incorporation of one of a several types of existing user sensing mechanisms into the device can start warm water and/or a solution flowing through the brush bristles as the user's hands are placed near the brushes or touch the brush bristles.

[0036] The brush may also be connected directly to the sink faucet by piping so that opening and/or closing the faucet valves will send and/or stop water flowing to the brush and/or brushes as well as the faucet spout. A reservoir to dispense liquid soap and/or another kind of liquid and/or sanitizing solution can be connected to the piping that supplies water to the brush and/or brushes.

[0037] First, referring to FIG 1, a perspective view of the improved fingernail brush assembly 16 is shown. The fingernail brush assembly 16 includes an enclosed liquid tank 13 upon the top surface of which is bonded a sufficiency of bristle sets 19 regularly interspersed with liquid port holes 12 of such a diameter that liquid can flow through the holes at a rate and/or volume most conducive to effective and/or comfortable nail scrubbing.

[0038] A user sensing mechanism can be incorporated into a sensor housing 14 which can be attached to the assembly 16 in such a way that the liquid flows when detected by the sensing mechanism, for example as the user's hand and/or hands approach(s) the assembly 16. In another embodiment, the sensor can start a vibrating action of the bristle sets 19, as well as turning off liquid flow to the assembly as the user's hand withdraws from the bristle sets 19 and/or the assembly 16. A motor and/or other device and/or devices can be incorporated so that the bristles can be moved in a scrubbing motion which could be horizontal, rotary and/or any other motion that would facilitate

fingernail and/or cuticle cleaning.

[0039] FIG 2A, is a top view of a hand washing sink 100, showing alternate placements of the assembly 16. Pairs of the assembly 16 can be mounted on the sink faucet 200 by means of a faucet adapter assembly 20, and/or can be fastened into the front vertical surface of the sink 100 itself. The assembly 16 in an alternative embodiment can be fastened into the side and/or even the back vertical sink surfaces dependent on the convenience of the intended user.

[0040] FIG 2B, is a front view of a hand washing sink 100, showing the fingernail brush assembly 16 from a different view. Pairs of the assembly 16 are mounted on the faucet 200 and/or the front vertical surface of the sink 100. As in FIG 2A, the assembly 16 can also be bolted into the side and/or even the back vertical sink surfaces if in some circumstances, that attachment is more convenient for the user.

[0041] Turning now to FIG 3A, a front view of the faucet adapter subassembly 20 of the fingernail brush assembly is shown. In this exemplary embodiment the faucet adapter subassembly 20 is attached to the faucet 200 spout aerator receiver by means of a threaded aerator fitting 21. It is to be appreciated that valve fitting and assemblies may vary without departing from the spirit of this invention. By way of example, inside the assembly 20 is a check valve assembly consisting of a ball 23, a spring 24 and/or a spring seat 25. In such a setup when the liquid flow to the faucet 200 is off, the check valve spring 24 can be in a relaxed state which forces the ball 23 upward into the ball seat 22, sealing the passageway. Then when the water is first turned on, the liquid exits the subassembly 20 through tubes 26 and into the brush assembly tank(s) 13.

[0042] As liquid pressure builds inside the upper portion of the subassembly 20, the ball compresses the spring, allowing the liquid to flow through the previously sealed passageway and/or out the bottom end of the device 20. The spring 24 can be sized and/or tensioned. The liquid tubes 26 can be dimensioned so that while most of the liquid flows out the lower end of the device 20, a volume of liquid most conducive to effective and/or comfortable nail and/or cuticle scrubbing can flow through the water tank(s) 13.

[0043] Turning now to a circumferential slip ring brush bracket 27. Its purpose is to ensure positioning of the assembly 20, i.e. irrespective of what rotational

position the assembly 20 ends up in when the threaded aerator fitting 21 is tightly screwed into the faucet 200 spout aerator receiver, the brushes can be adjusted by rotating the slip ring until the vertical plane in which the brushes lie is most convenient to the user. Once positioned according to this criterion, a set screw 28, for example, can be tightened to hold the brushes in position.

[0044] FIG 3B is a cross sectional view of the faucet adaptor subassembly 20 through the slip ring section 27, showing the circumferential relationship between the slip ring 27 and/or the subassembly 20 and/or the manner in which the slip ring 27 can act to hold the brush assembly 16.

[0045] Turning now to FIG 4, a side view of the brush assembly 16 is shown fastened into a vertical side of the sink 102 by a fastening means, for example, a machine screw 30. In this embodiment the screw can have a tapered head 31 so that it can be tightened flush into the brush bristle backing plate 15 so that it cannot catch the user's fingernails and/or finger ends when the brush is used.

[0046] A hollow bolt shaft 32 can have a plurality of water inlets 33 spaced circumferentially to allow liquid to enter the brush water tank 13 when water flows through the flexible water line 35. A toggle wing fastening 34 can attaches the screw assembly through the vertical sink side 102.

[0047] Liquid can enter the hollow screw shaft through a length of flexible water line 35 which is integral to the hollow screw shaft 32. The length of the water line can be of a length that can facilitate threading passing through the wall of the sink so that it can be attached to the water supply line at a convenient point under the sink. The flexible water line 35 can be, in one embodiment, fitted inside the hollow screw shaft 32 by a water line securement fitting 352.

[0048] A nut 36 tightens a gasket and/or washer 37 securely against the inside surface of the sink 102 so that no water can leak out of the sink through the hole drilled into the sink's side to accommodate the brush assembly if the sink should be filled to a level and/or beyond the height of the drilled hole.

[0049] In an exemplary embodiment, a sensor signal wire 141, one end of which is connected to the user sensing mechanism located in the sensor housing 14, can pass through the interior of the brush assembly water tank 13, enters the hollow screw 30

through one of the water inlets 33 and/or feeds is inserted into the upper end of the flexible water line 35. The sensor signal wire 141 passes down through the water line. The lower end of the wire terminates in the water mixing subassembly, illustrated in FIG 5.

[0050] FIG 5 is a front view of an exemplary embodiment of the water mixing subassembly 40 of the bolt on brush assembly. The sensor signal wire 141 can travel through the flexible water line 351 terminating in the user sensor valve housing 142 which regulates liquid flow through the line to the bolt on brush assembly in response to the state of the sensor signal wire 141. When the valve is open the liquid flow rate through the hot and/or cold branch supply lines 301 is controlled by the size of the brush water ports.

[0051] Turning now to FIG 6, a back view of the supply lines to the faucets is shown, illustrating the relationship between the supply lines 300 and/or the liquid mixing subassembly 40. For example, water can enter the previously described liquid mixing subassembly 40 through the hot and/or cold branch lines 301 from the hot and/or cold main lines 300 by means of installed fittings 45.

[0052] FIG 7 is a side view of a simplified brush assembly 16 bolted into a vertical side of the sink 102 by a fastening means, in this example a hollow machine screw 30. No user sensing mechanism is used in this version (see FIG 4) since the liquid source for the flexible water line 35 is the faucet's own mixing chamber, as illustrated in FIG 8.

[0053] FIG 8 illustrates a back view of a sink faucet including an existing tap 402 into its water mixing chamber 401 for one of several existing auxiliary devices such as a spray device. The other end of the flexible water line 35 (illustrated in FIG 7) can be connected to the existing tap 402. This line conveys a mix of hot and/or cold water to the brush assembly whenever the user turns on the faucets.

[0054] FIG 9A provides top and/or side views of an optional spray guard 70 which can be fitted onto the fingernail brush assembly 16 to prevent fingernail brush water spray from wetting adjoining surfaces outside of the sink. The spray guard 70, in an exemplary embodiment, can be both taller than the brush assembly 16 and/or sufficiently offset from the brush edges so that it does not hinder effective use of the

brush to clean fingernails and/or cuticles while still guarding against adjoining non sink surfaces being wetted.

[0055] Turning now to FIG 9B, a perspective view describing how the spray guard 70 can slides down over the end of the brush assembly 16 until the brush assembly's spray guard snap lock 71 catches the snap lock opening 72 on the spray guard. This mechanism and/or a second identical mechanism on the other side of the brush assembly and/or the spray guard locks the spray guard onto the brush while permitting easy removal for cleaning and/or replacement of the spray guard. The spray guard can be made in a number of sizes and/or shapes to suit the users' needs.

[0056] FIG 10A is a perspective view illustrating how a slow-release sanitizing compound stick 60 inserted into the upper end of the brush assembly water tank 13 into an appropriately sized compound release chamber through the chamber entrance 62. The chamber entrance which is sealed with a suitable plug 63 so that water cannot escape the mixing chamber under an expected range of water pressures.

[0057] FIG 10B, is a side view of an exemplary fingernail brush assembly in its vertical position, illustrating the nature of the sanitizing compound release chamber 64. The chamber 64 extends the entire long dimension of the water tank 13. It is positioned more and/or less centrally in all three dimensions of the water tank 13. The central positioning and/or a plurality of perforations throughout the length and/or circumference of the chamber 64 can ensure that the slow release sanitizer compound stick can dispense the amount of sanitizer into the water passing through the brush assembly that is commensurate with effective antiseptic sanitation.

[0058] The lower end of the chamber 64 includes a plug 65 so that when the brush assembly is mounted vertically, the lower end of the inserted sanitizer compound stick is above the lowest set of water port holes in the brush bristle backing plate 15 so that no part of the sanitizer compound stick can remain in water once the water drains from the tank 13 when the brush assembly is not in use. If the brush is mounted horizontally, the centrality of the release chamber's positioning can also ensure that no part of the sanitizing compound stick can remain in water when the brush assembly is not in use.

[0059] FIG 11 is a side view of an alternate embodiment of the fingernail

brush assembly 16 which features a non-functional water tank 13 and/or suction cup attachments 80 as a mounting option.

[0060] FIGURE 12A is a top view of a sink 100, showing a horizontal lip 811 at the upper part of the inside vertical sink 100 surface. In this exemplary embodiment, a fingernail brush assembly16 is placed just below the lip 811. The fingernail brush assembly16 is shown fitting through an opening in the sink100. This assembly possesses a barbed connector section 822 in the back (bristles are in front) to receive a liquid supply through a tube and/or pipe that can be attached to it. The fingernail brush assembly16 is attached to a mounting plate 830 which is fastened to the inside sink 100 surface just below the sink lip 811. In this example, only the tips of the fingernail brush assembly16 bristle19 tips are visible beyond the sink lip 811 from the user's perspective.

[0061] Figure 12B is an elevation view of an inside vertical surface of a sink100 (opposite the faucet side). In this exemplary embodiment, the fingernail brush assembly16 is attached to a mounting plate 830. The fingernail brush assembly mounting plate 830 is fixed to the upper part of the sink 100 vertical surface just below the sink lip 811. The lip houses a pipe 814 with perforations 815 or other means of putting water and/or fluid on the brush bristles. The lip can be integral to the sink surface and/or uniform on top but with a curved radius. Underneath the lip is concave longitudinally providing space for obscuring a pipe of at least 0.25 inches from view.

[0062] Figure 13A is a side view of the fingernail brush assembly16. A barbed connector section 822 can provide fluid distribution to the bristles19 by filling the fluid reservoirs 820 which can then distribute the fluid to perforations 827 and/or then the ports 828. A gasket 829 can be fitted between the fingernail brush assembly mounting plate823 and/or the sink100 surface.

[0063] Figure 13B is a rear view (opposite the bristle side) of the fingernail brush assembly16. The connector 840 is threaded (see 842, Figure 15) into the fluid reservoirs 820. In one embodiment a threaded sleeve 824 can be attached to the barbed connector section 822 allowing for fastening of the of the fingernail brush assembly16 to the inside surface of the sink. A nut 36 and/or washer 37, for example can be one such means to tighten the fingernail brush assembly 16 against the outside surface

of the sink after passing the barbed section 822 and/or threaded sleeve through the sink wall. This fingernail brush assembly attachment method one preferred method when a mounting plate 830 is not used. In this example, Allen plugs 821 are threaded into each end of the reservoirs.

[0064] Figure 14 is a plan view of the fluid distribution and/or mixing system. Multiple reservoirs 831 are fixed in place under and/or in close proximity to the sink for storage and/or dispensing of chemical sanitizers, cleaners etc. These reservoirs 831 have a valve 832 in the piping 837 from the reservoirs 831to control flow. In this example, a first "T" fitting 836 can be used to join the piping 837 from the reservoirs 831. The remaining connection of this first "T" fitting 836 is connected to a pipe 837 that connects to a pump 833 inlet fitting at the other end. On the other side of the pump 833 is an outlet fitting. The pump 833 connections are a second "T fitting 836 in this system. A pipe 837 connects the pump 833 outlet fitting to another "T" fitting 836. The remaining two connections of this third "T" fitting 836 are attached to multiple pipes 837. One of these pipes 837 can attach on the other end to a connector barbed section 822 . The remaining pipe from the third "T" fitting attaches to a valve 832. This valve 832 controls the flow of water from a faucet tap or other potable water source. (The flow of any water under pressure could also be controlled by a modified faucet adaptor subassembly described in Figure 3A). A backflow preventer 834 is provided in the liquid input line 835 between the faucet tap and/or another liquid source, for example, a public water supply.

[0065] Figure 15 is an exploded view of a connector assembly 840. In one embodiment of the invention, the connector threaded section 842 is screwed into the fingernail brush assembly16 attaching the connector assembly840 to the fingernail brush assembly16. A threaded sleeve 824 can be slid over the barbed connector section 822 until it contacts the hex holder 838 and/or is attached there. This leaves a portion of the barbed section exposed for pipe 837 attachment with a clamp 839 and/or comprises the connector assembly 840. A washer 37 and/or a nut 36, for example, can be used for fastening the connector assembly 840 to the sink100 when a fingernail brush assembly mounting plate830 is not used.

[0066] While the preferred embodiment of the invention has been illustrated and/or described, as noted above, many changes can be made without departing

from the spirit and/or scope of the invention. For example, newly manufactured sinks and/or faucets could have more integrated and/or unobtrusive brushes. The mounting base could would be manufactured as a part of the sink and/or faucet.

[0067] It is further contemplated that various materials for the fingernail scrubbing device mounting base can be used, including, but not limited to plastic, stainless steel, brass, copper, bronze and/or any other durable, easily cleanable material. but plastic and/or a combination of plastic and/or stainless steel is the most likely for common use. The nailbrush itself bristles could be made of the same materials as those now in standard found in today's nailbrushes but not limited to those materials.

[0068] The shape of the nailbrush and/or configuration of bristles can also vary depending on the application and/or the needs of the user. The splash guard provided for faucet brushes could be made of the same material as the brush body and/or any suitable material.

[0069] Additional features, such as, but not limited to, sound and/or lights produced by the very small devices available today. It is contemplated that such devices could incorporated into the brush body mounting base and/or as a separate attached, sealed unit and/or in any other location and/or configuration such as, under the sink and/or in the sink counter top. With these features the fingernail scrubbing device could sound like anything from a banjo to amplified scrubbing sounds while being used. Likewise, it could be illuminated while in use with flashing, steady, blinking and/or any other illumination frequency and/or intensity.

[0070] Another feature could be a mechanism that would "roll out" the sink mounted brush much as car headlights roll out. This could be overridden to leave the brush in either the exposed and/or hidden position.

[0071] While the preferred embodiment of the invention has been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the invention. Accordingly, the scope of the invention is not limited by the disclosure of the preferred embodiment. Instead, the invention should be determined entirely by reference to the claims that follow.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A fingernail brush assembly comprising:

a tank that is a mounting base for a brush plate, wherein the tank has a plurality of port holes to facilitate the flow of liquid from the tank to a user;

a plurality of bristle sets integrated into the brush plate attached to the mounting base such that the bristle sets are interspersed with the plurality of port holes of the tank; and

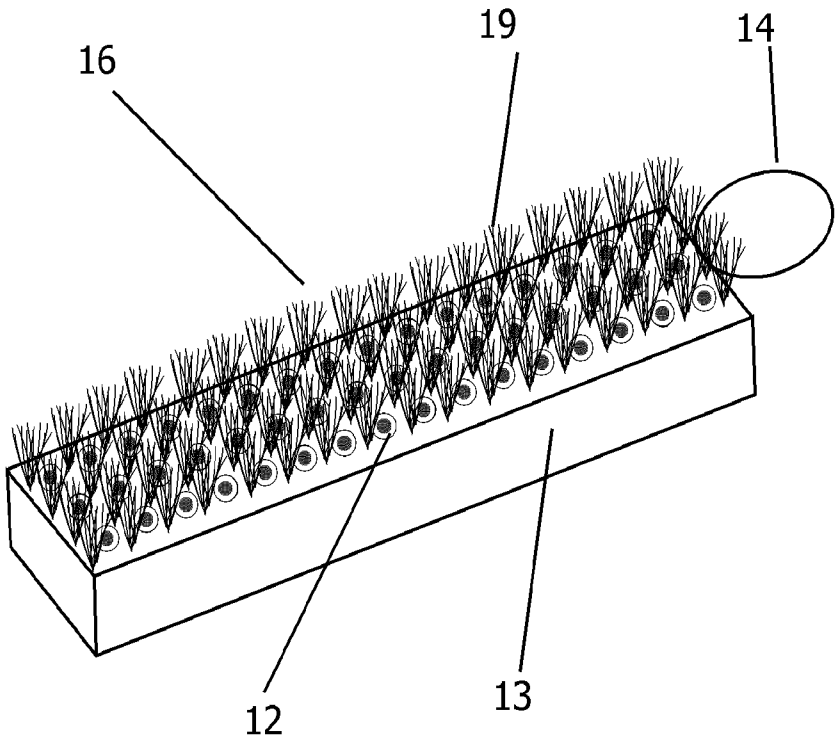
a user-sensing mechanism fitted in a sensor housing on the fingernail brush assembly.

2. The fingernail brush assembly of Claim 1, wherein said mounting base attaches to a sink faucet spout.

3. The fingernail brush assembly of Claim 1, wherein the mounting base is attached to an interior sink surface.

4. The fingernail brush assembly of Claim 1, wherein at least one mounting base with fingernail brush is provided for each hand.

5. The fingernail brush assembly of Claim 1, further comprising a sanitizer compound mixing chamber.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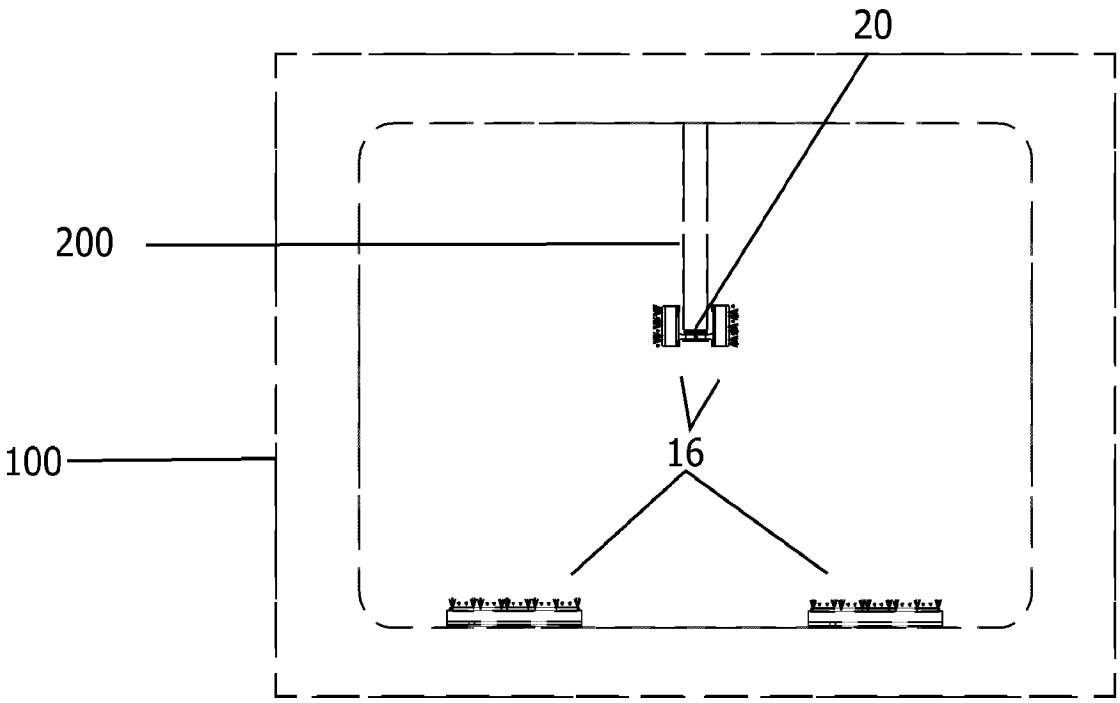
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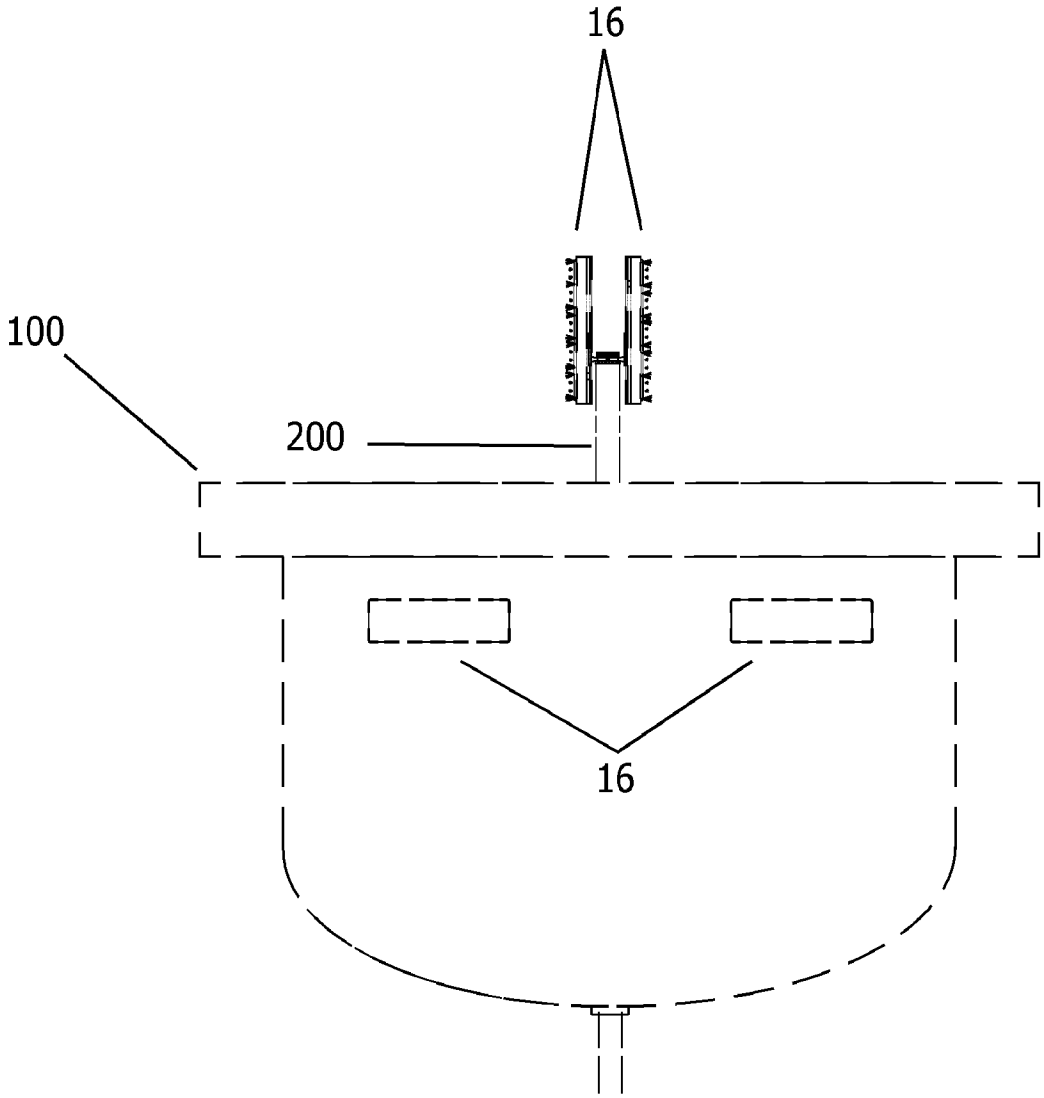
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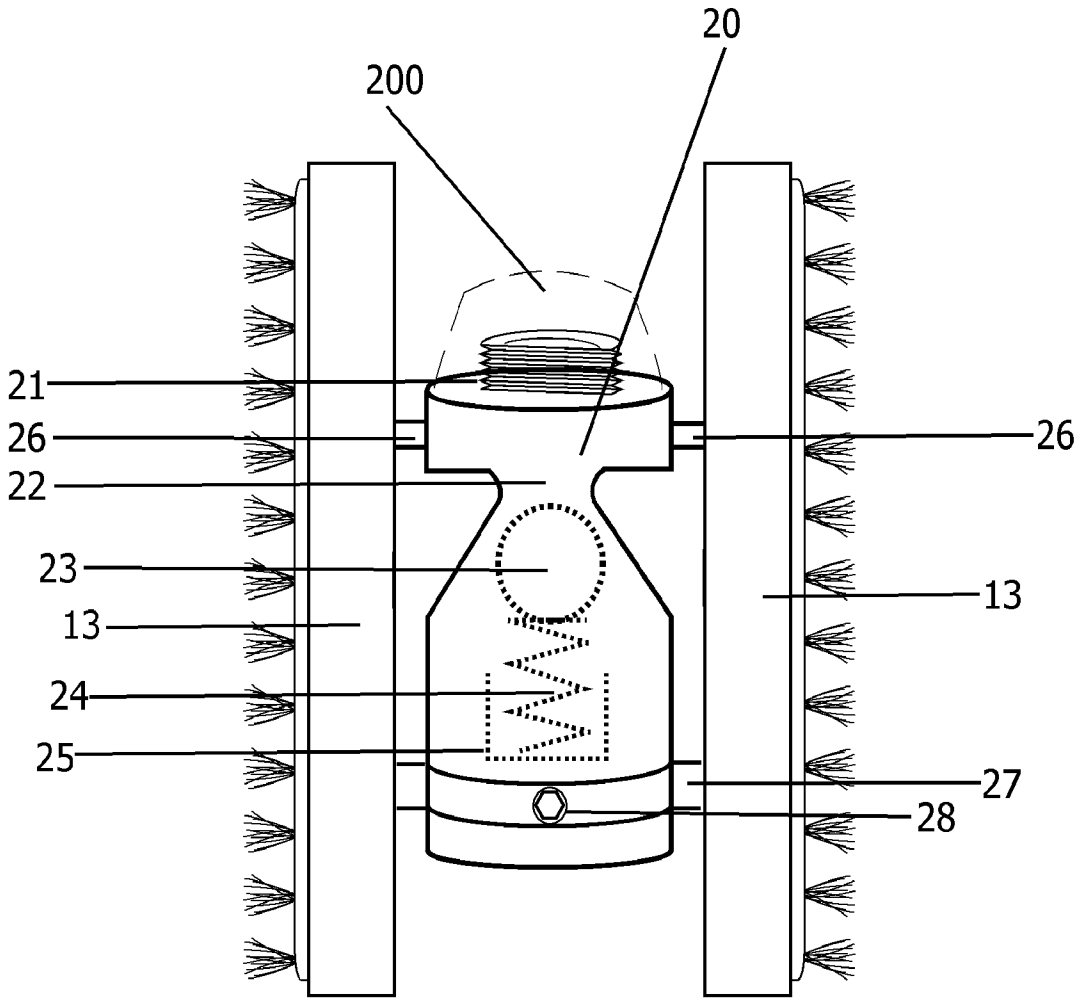
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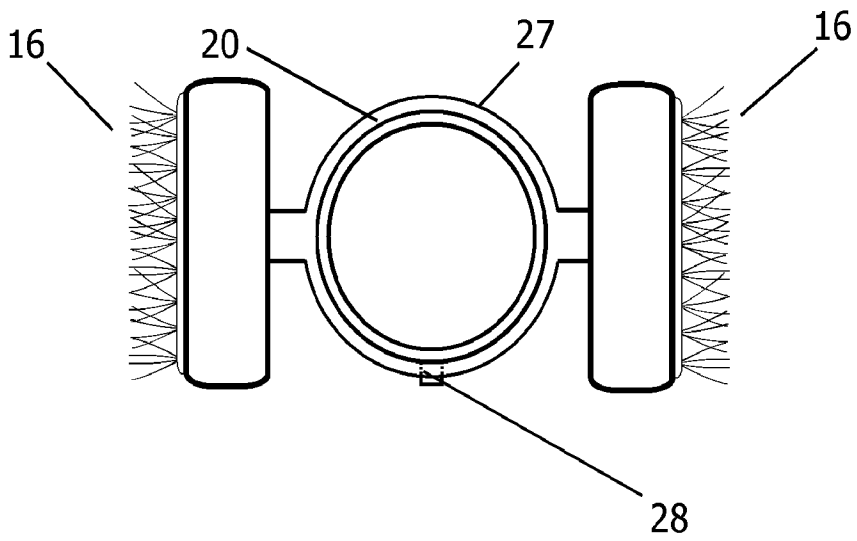
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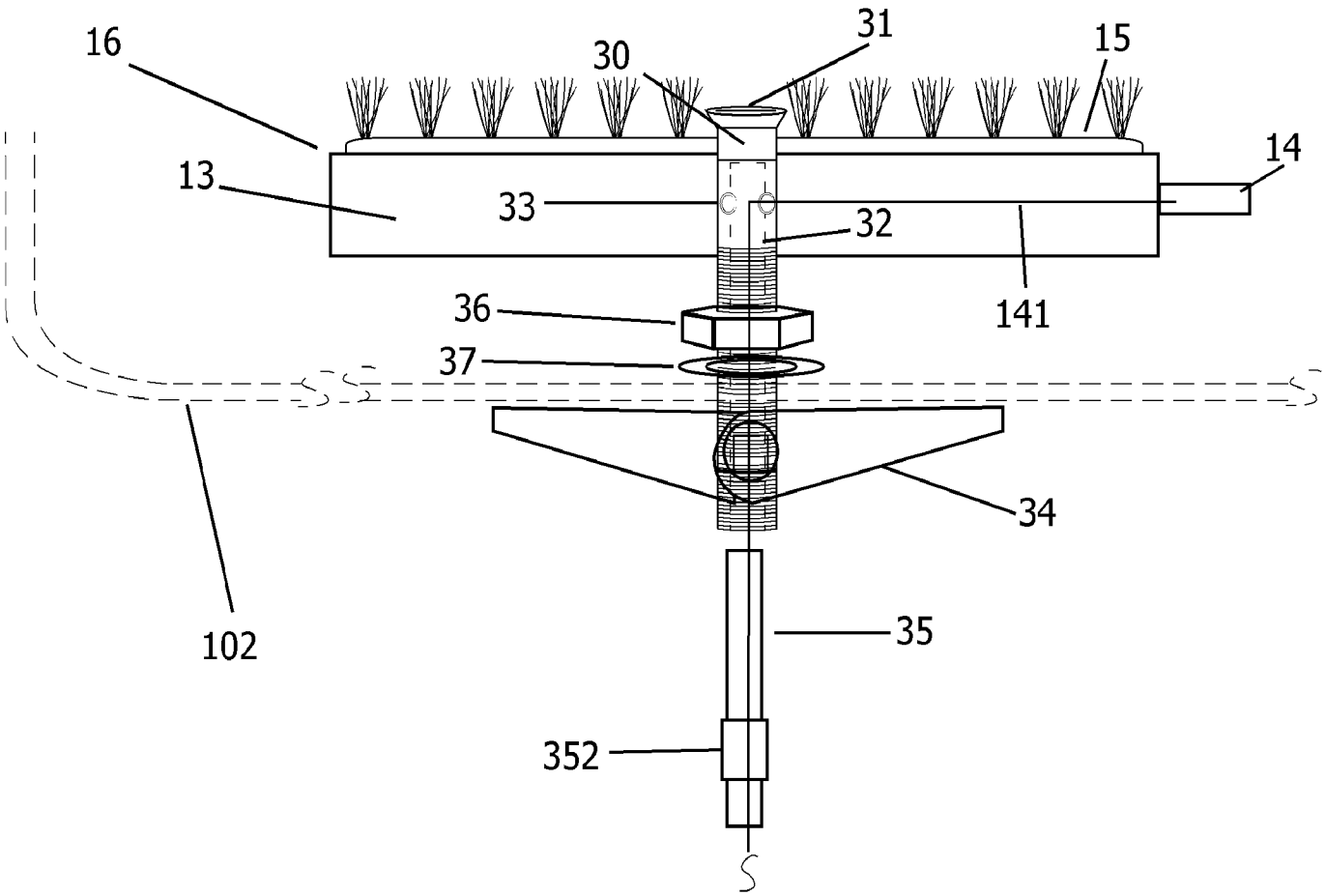
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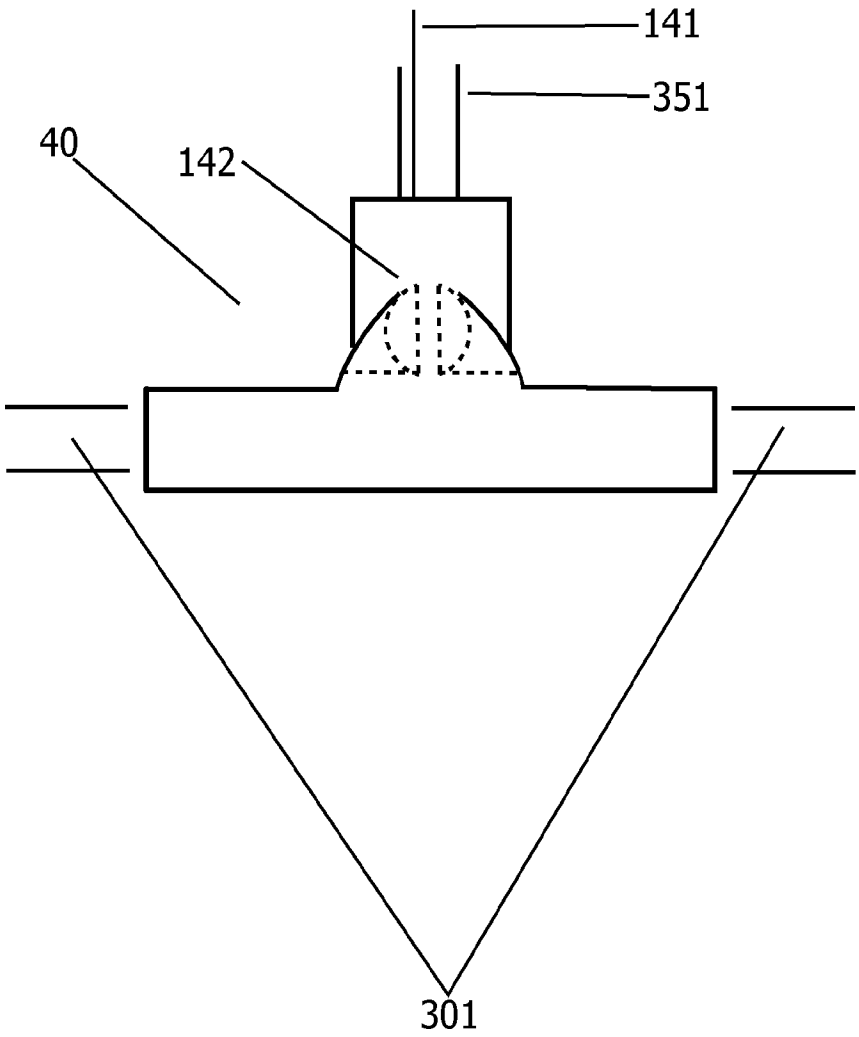
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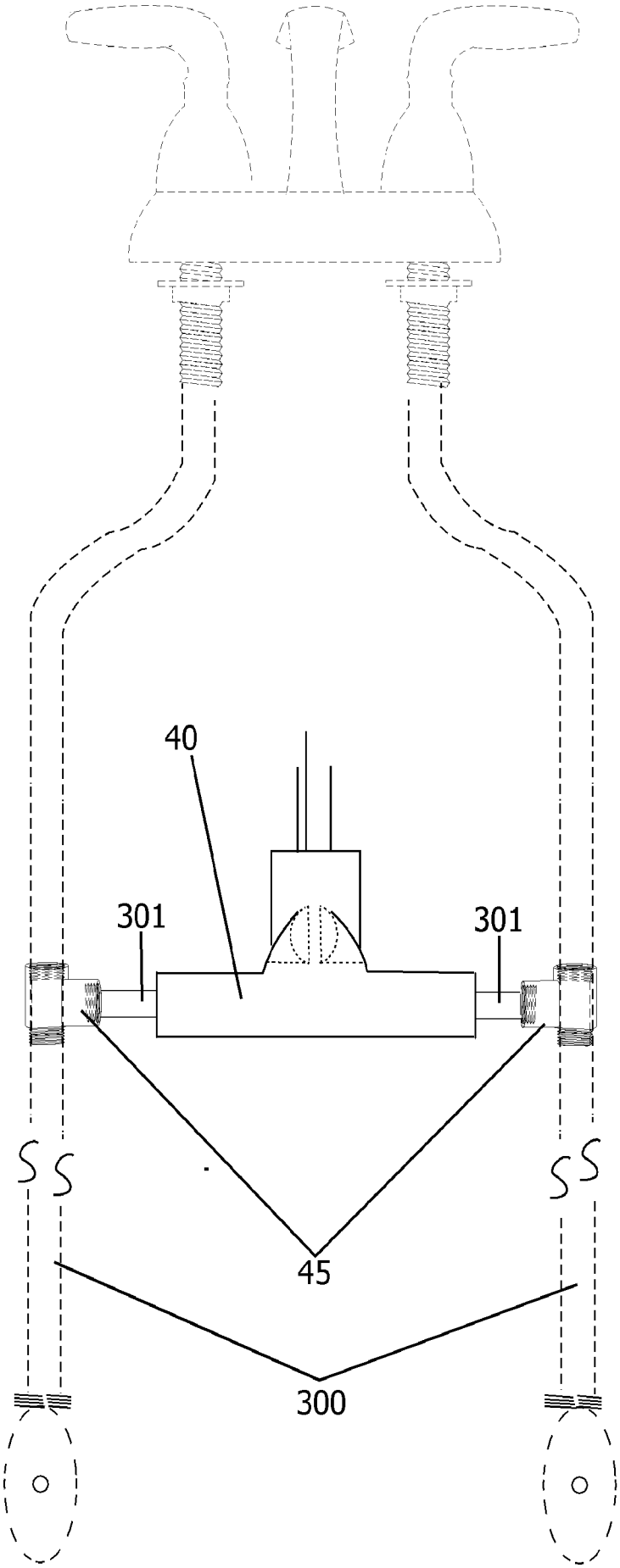
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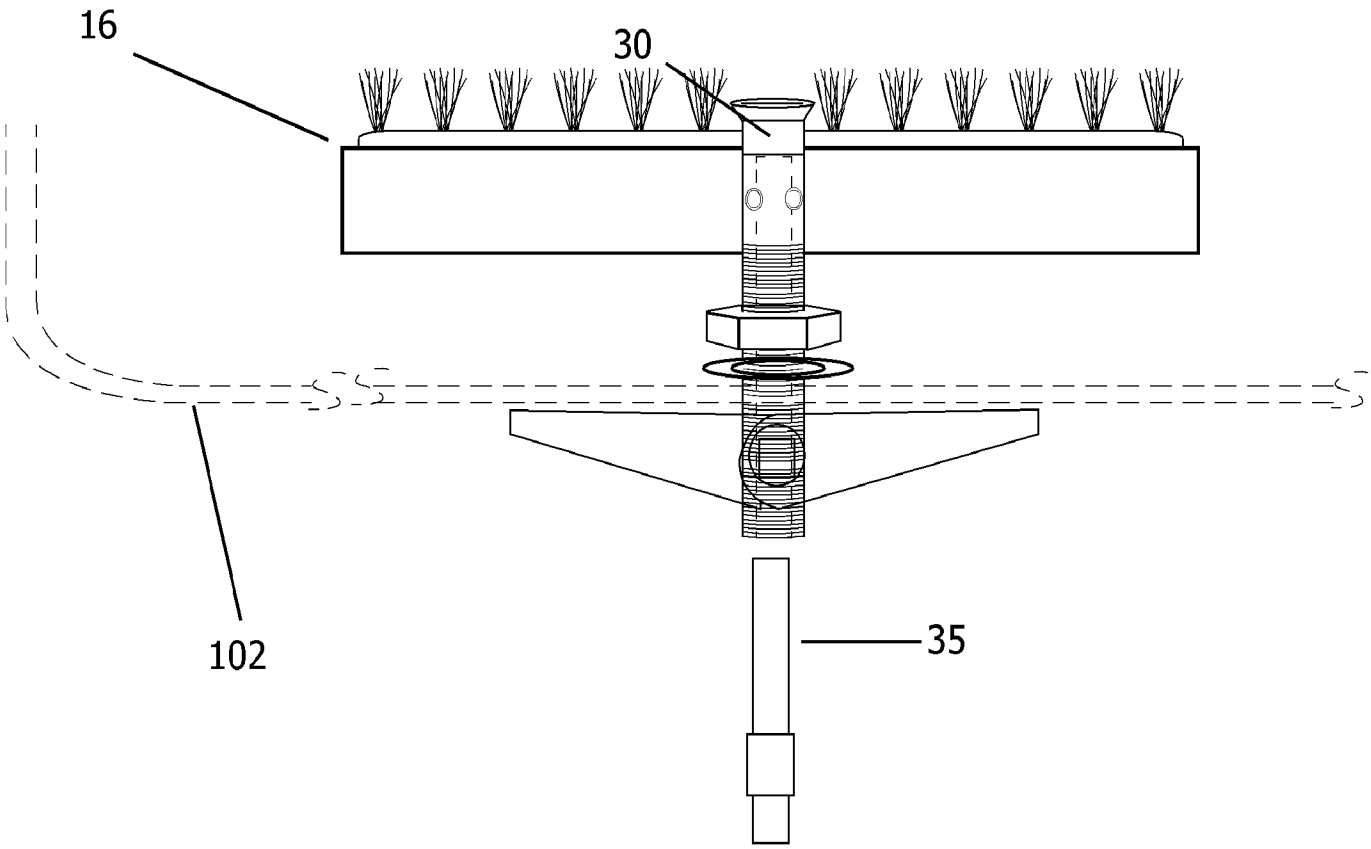
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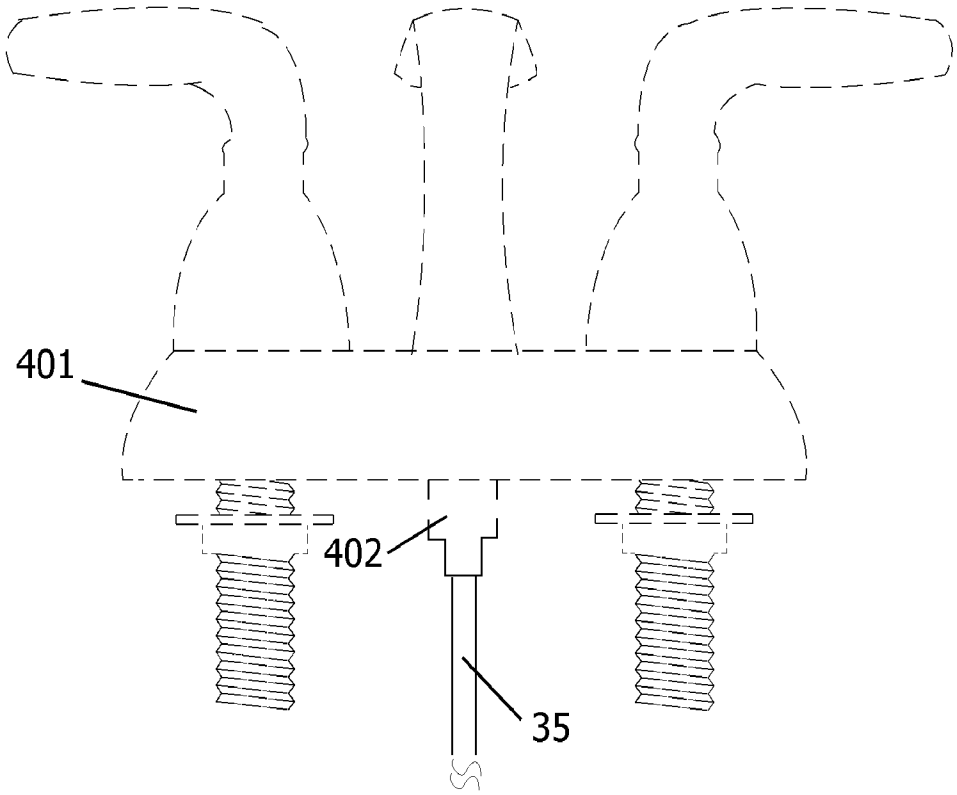
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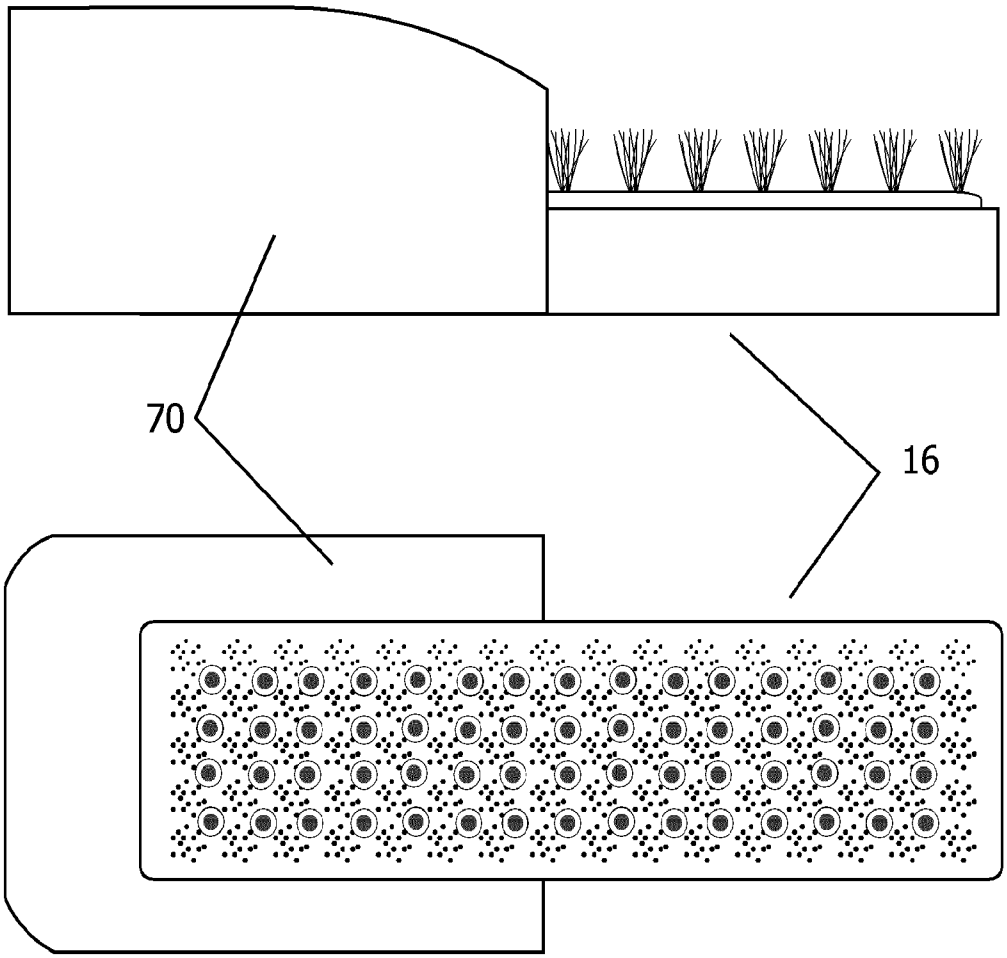
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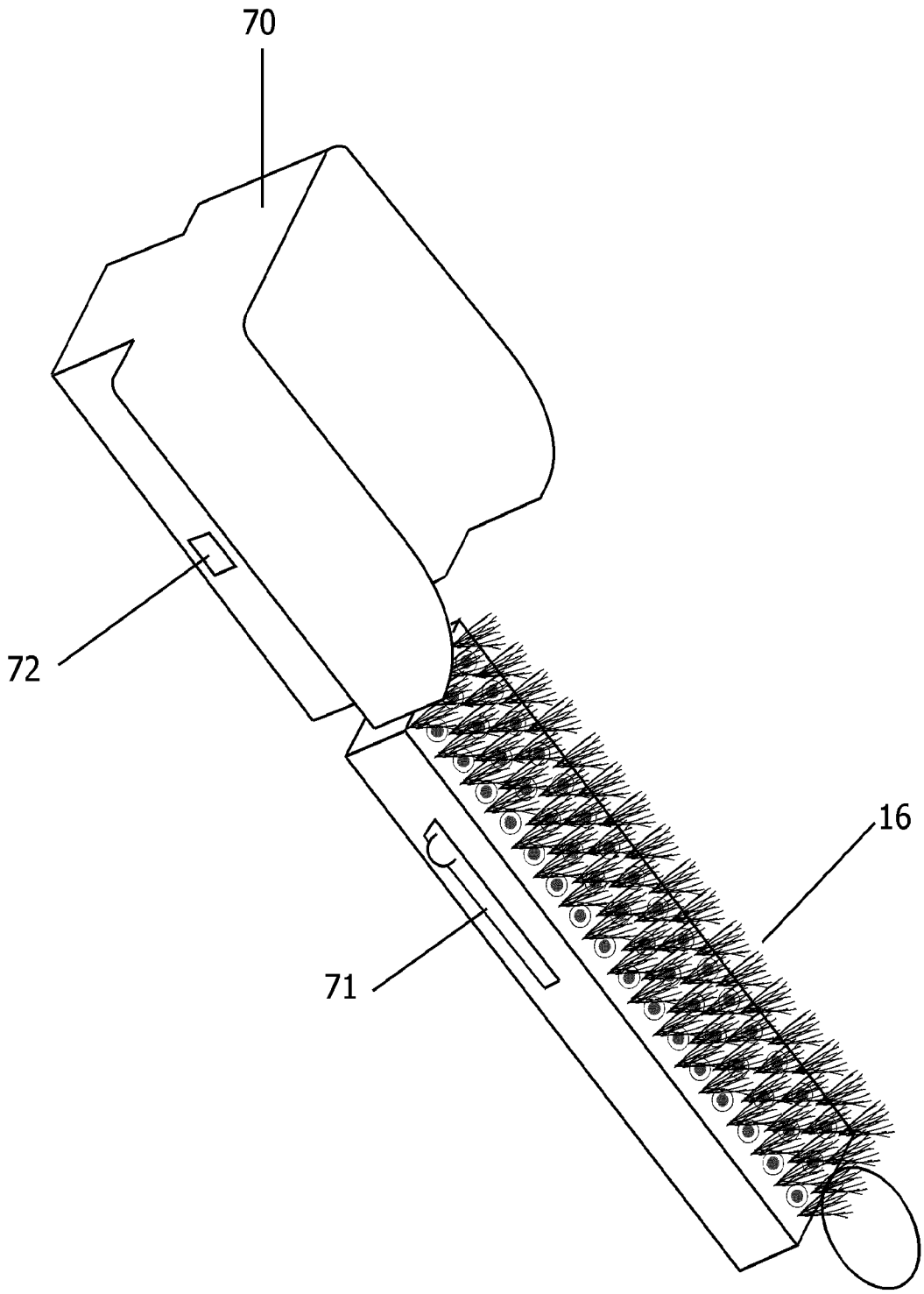
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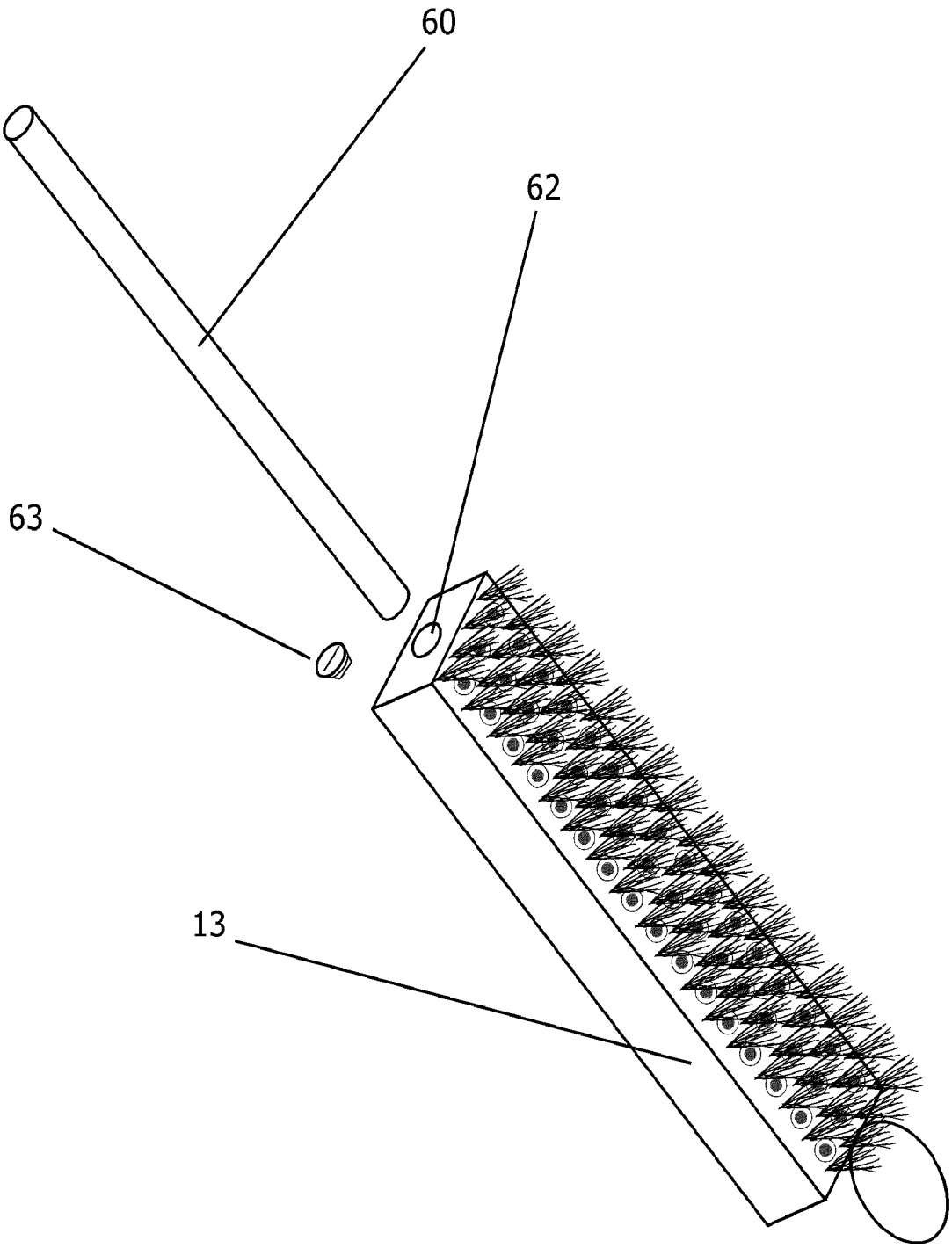
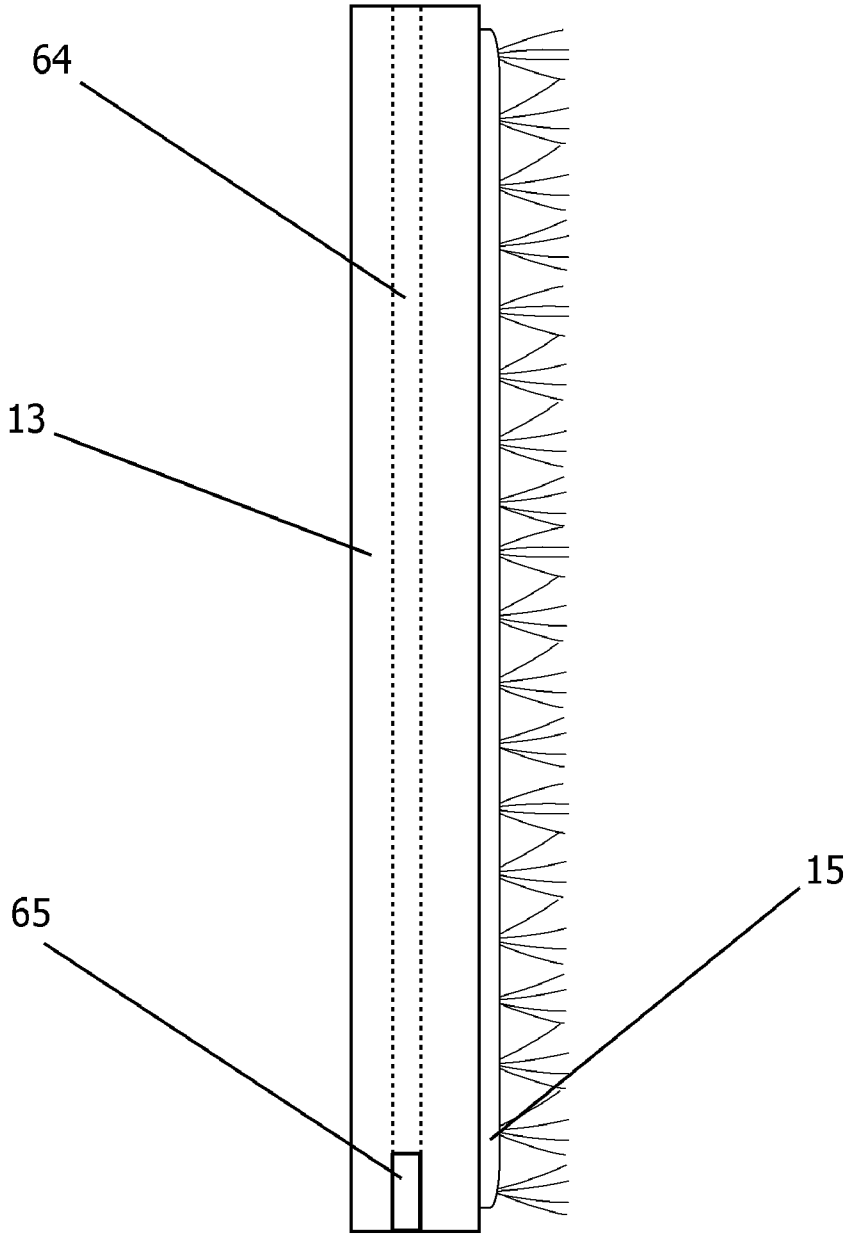
FIGURE 10A

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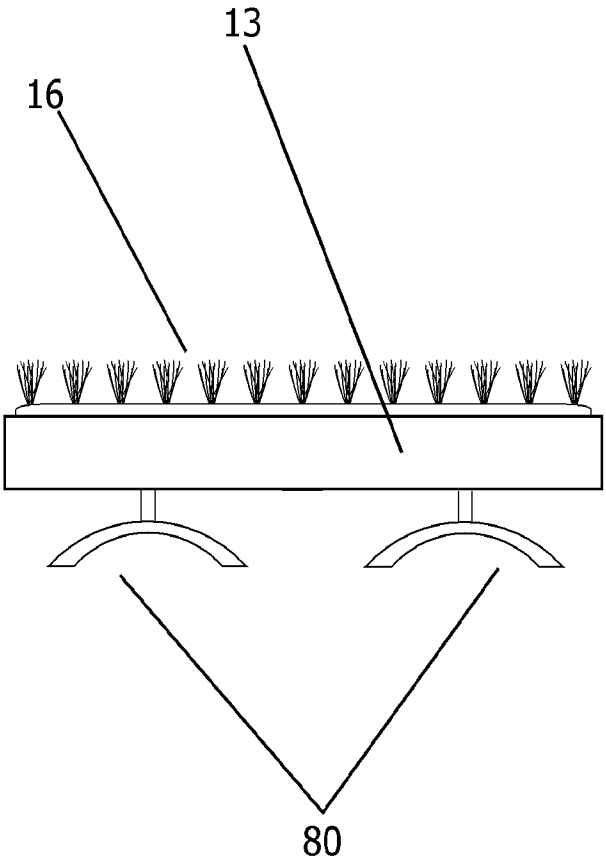
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FIGURE 12A

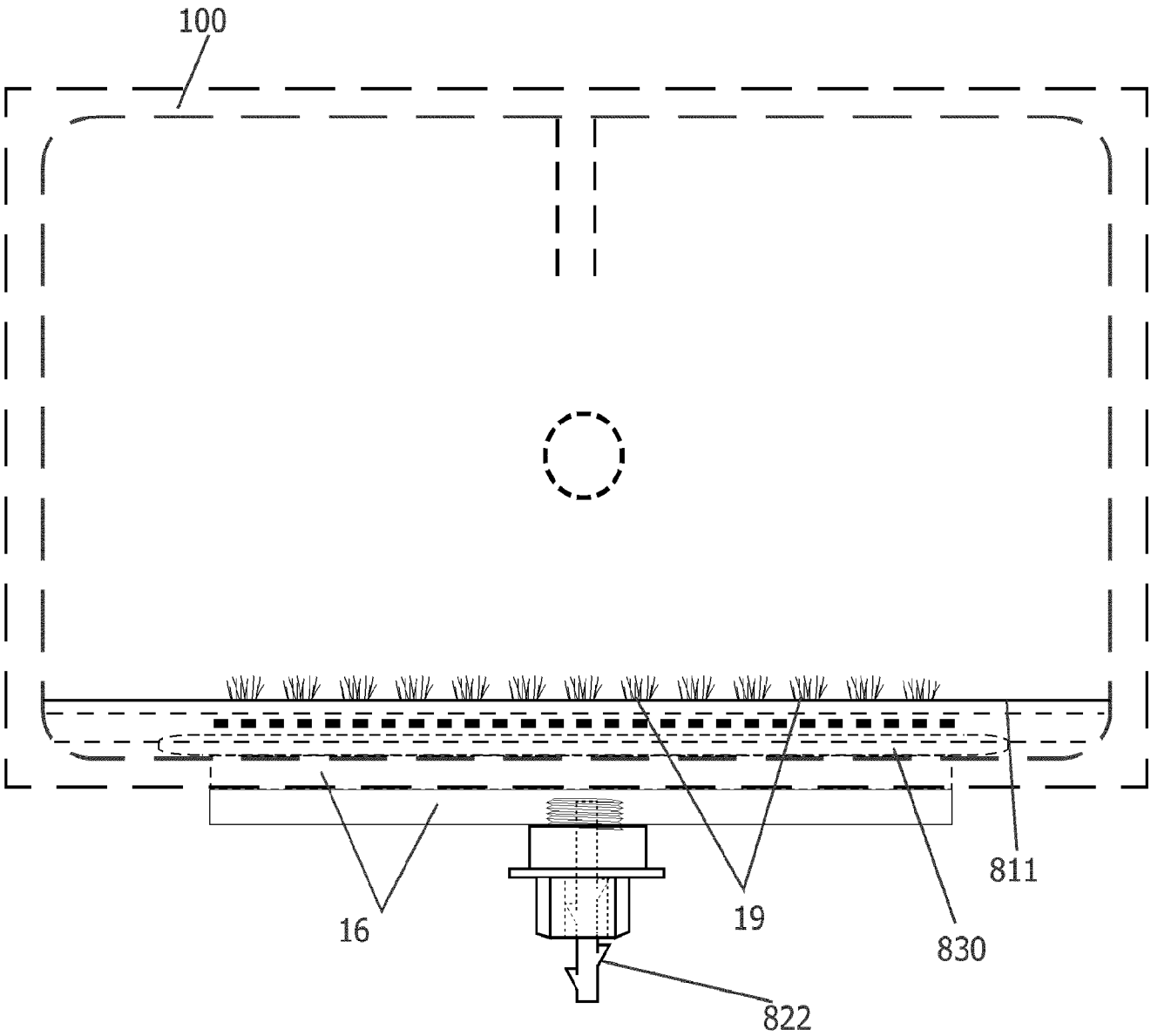


FIGURE 12B

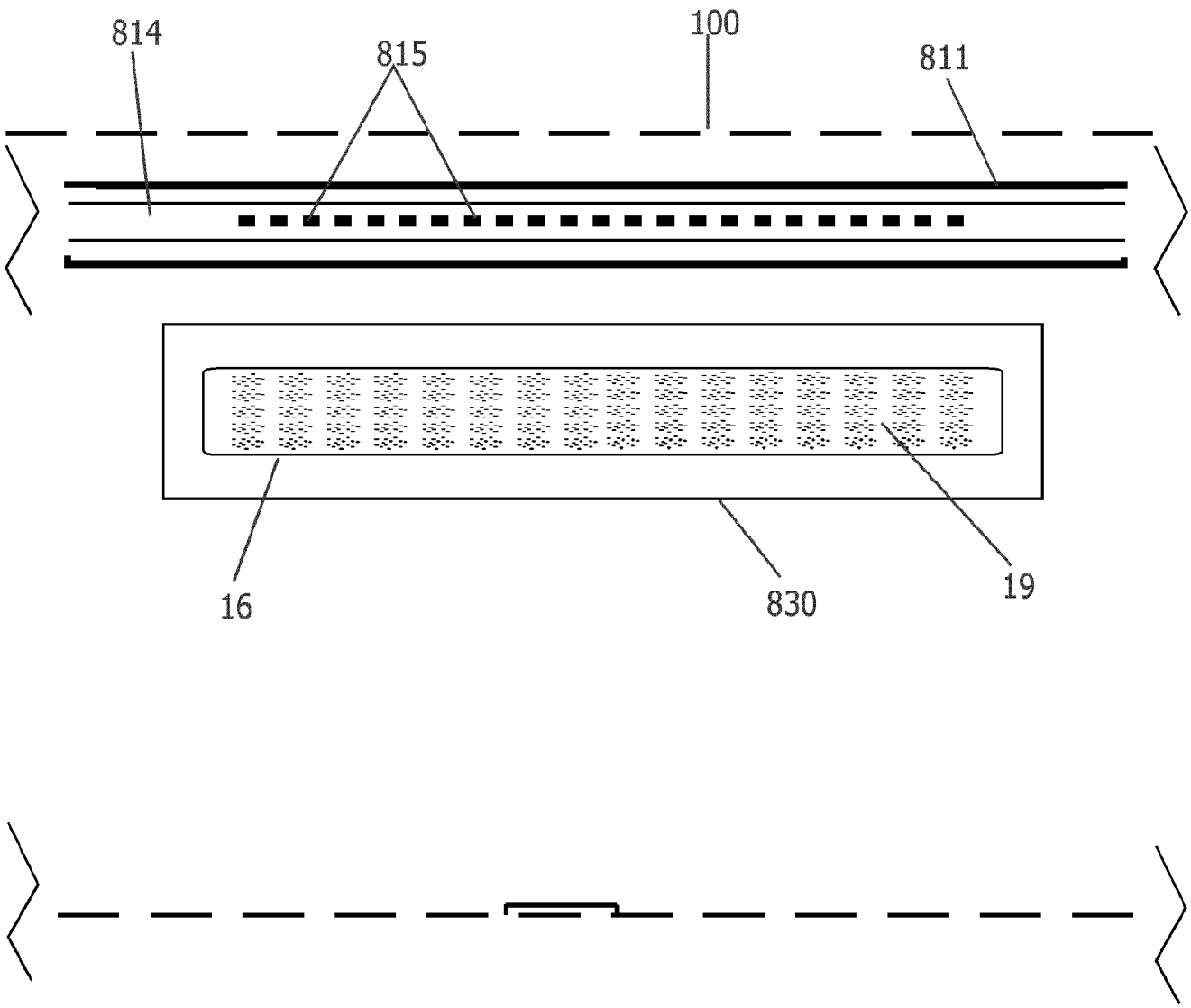


FIGURE 13A

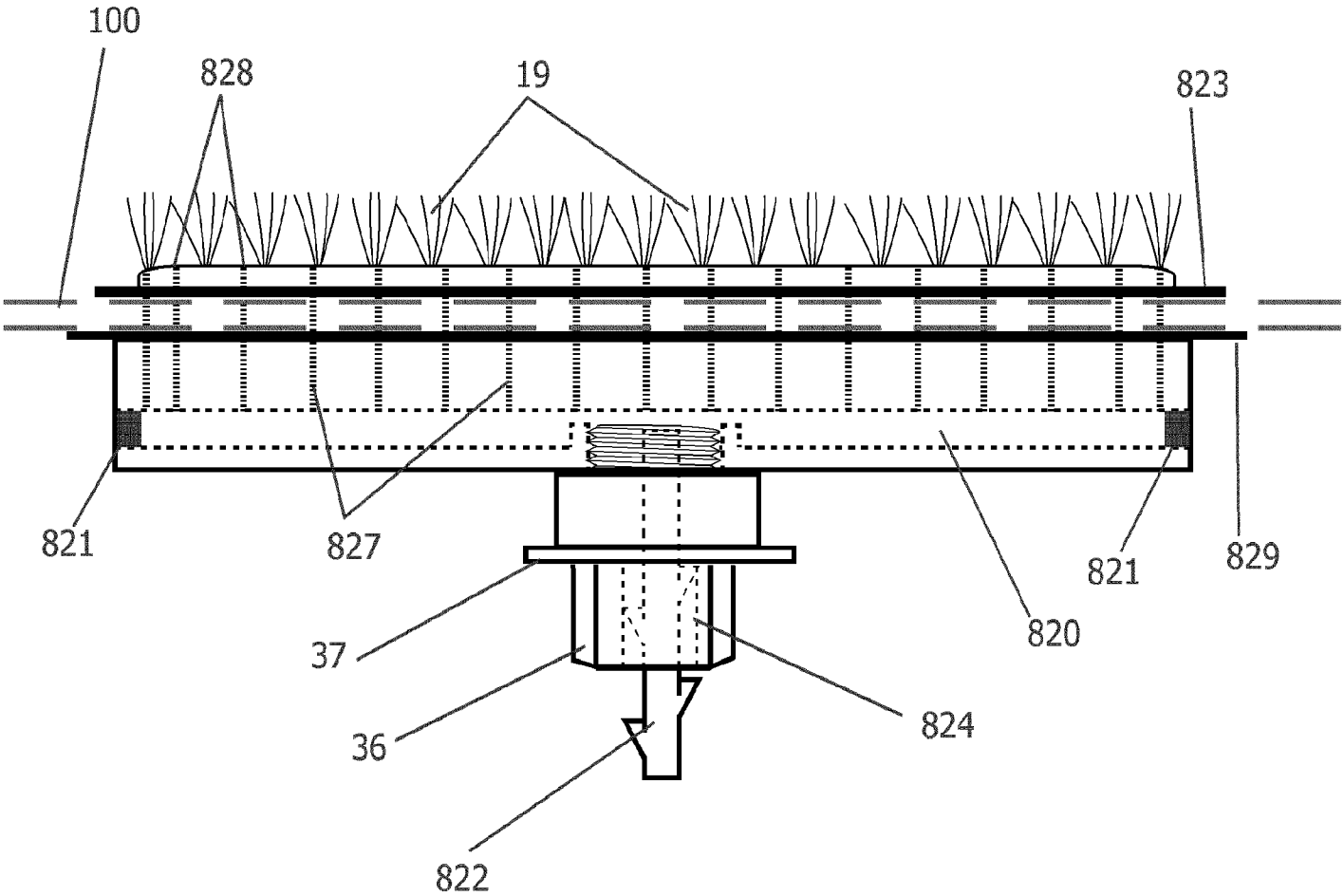


FIGURE 13B

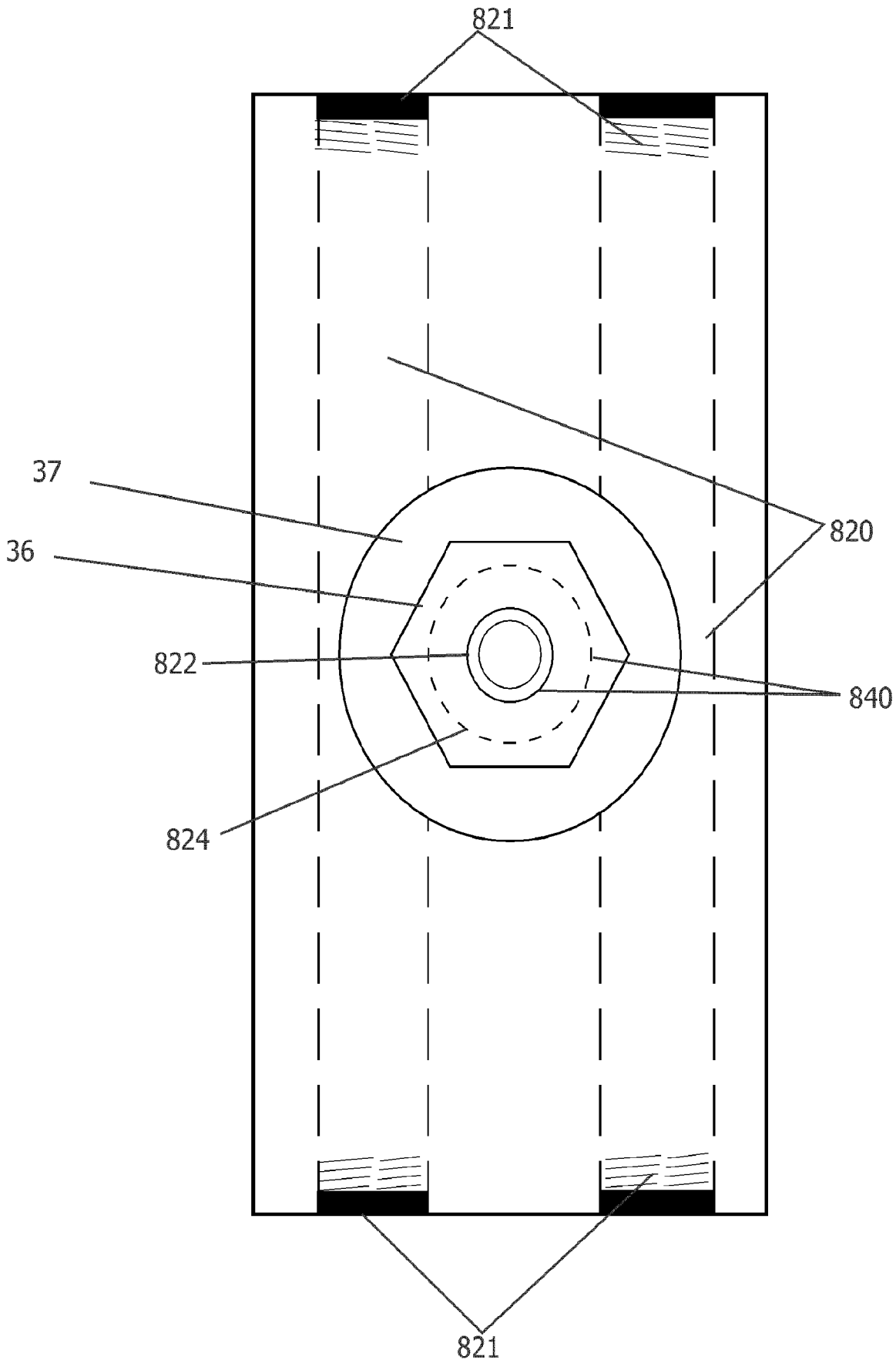


FIGURE 14

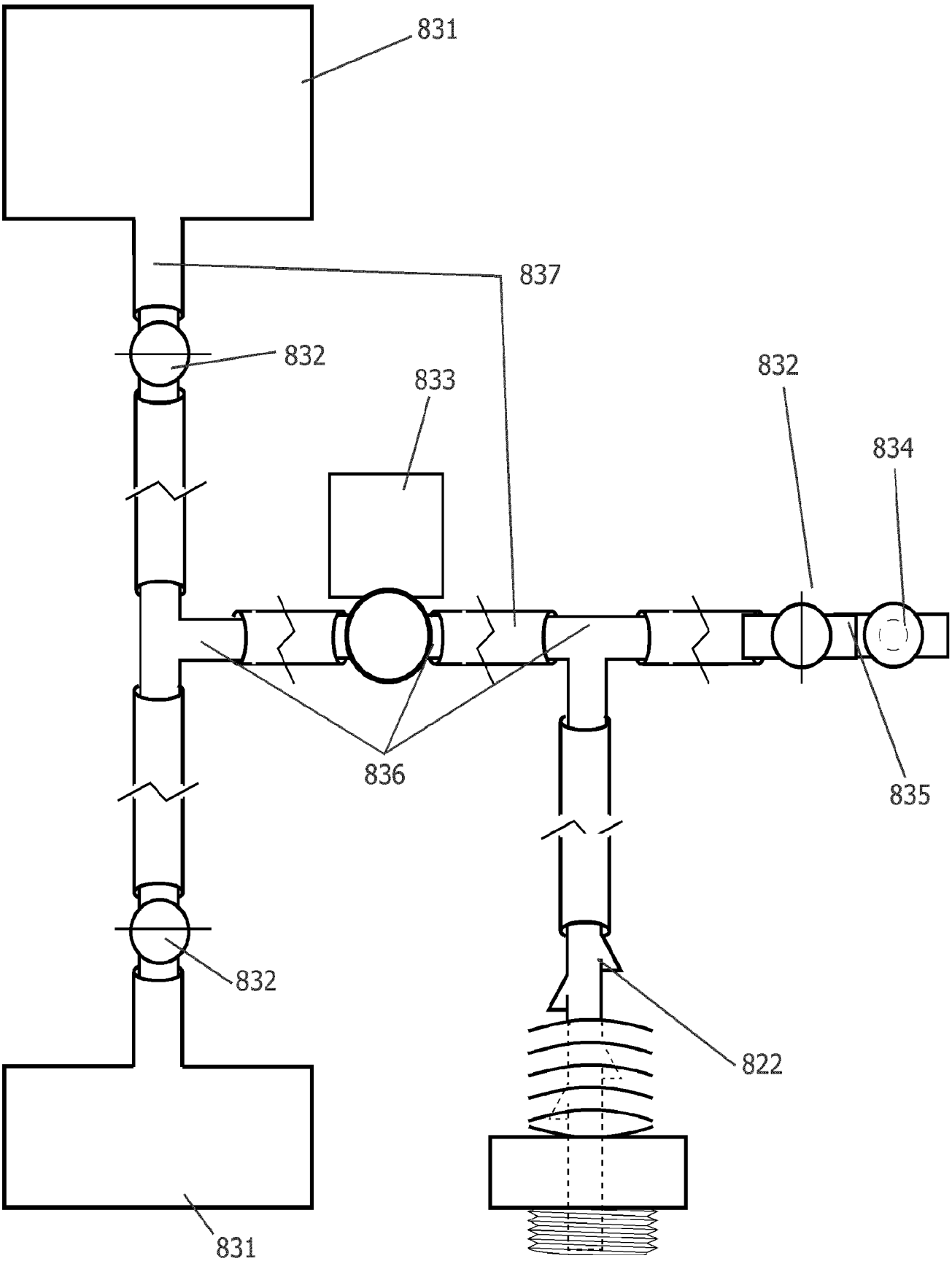
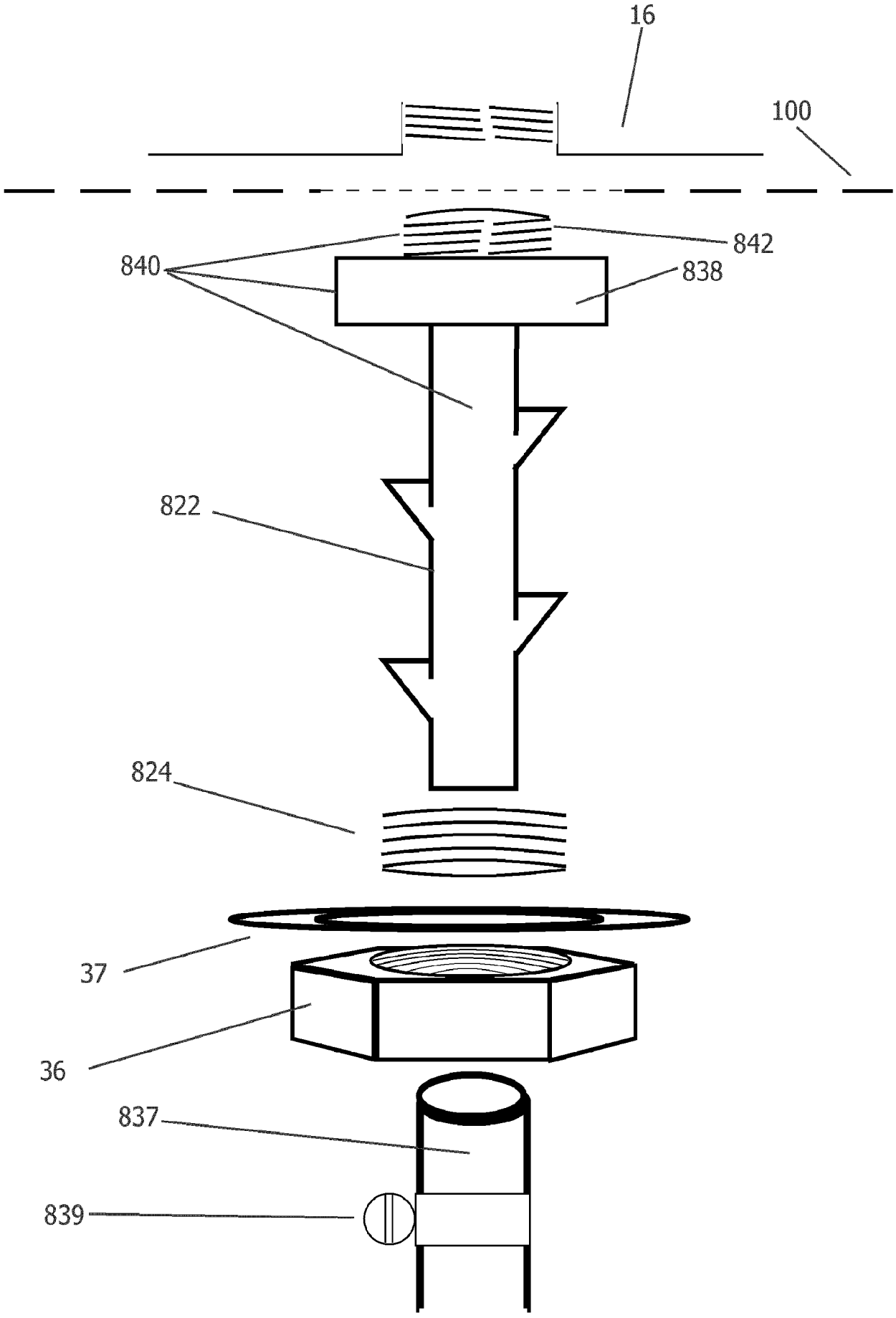


FIGURE 15



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/35776

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A46B 11/06; A46B 11/00; A46B 15/00 (2009.01)
USPC - 15/104.92, 160, 167.1, 167.3
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 15/104.92, 160, 167.1, 167.3
IPC(8): A46B 11/06; A46B 11/00; A46B 15/00 (2009.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 15/104.92;15/160;15/167.1;15/167.3; 15/21.1
IPC(8): A46B 11/06; A46B 11/00; A46B 15/00; A46B 11/02; A47K 7/04 (2009.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Electronic Databases Searched: Google Scholar; PubWest (US Patents full-text, US PGPubs full-text, EPO Abstracts, and JPO Abstracts) Search Terms Used: brush, store, contain, hold, water, body, base, housing, tank, holes, openings, apertures, bristles, faucet, sink, sensor, proximity, motion, hands, soap, sanitizer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2,707,293 A (FERRER) 3 May 1955 (03.05.1955) entire document especially Fig. 1, Fig. 2, col 2, ln 12-33, col 2, ln 45-47	1-5
Y	US 6,351,866 B1 (BRAGULLA) 5 March 2002 (05.03.2002) Fig. 2, Fig. 4, col 4, ln 61-67, col 7, ln 6-10	1-5
Y	US 526,390 A (GLAUBER) 25 September 1894 (25.09.1894) Fig. 2, page 1, ln 47-66	3
Y	US 4,417,826 A (FLOROS) 29 November 1983 (29.11.1983) Fig. 6, col 3, ln 3-8, col 3, ln 53-68, col 4, ln 1-3	5
A	US 2006/0123572 A1 (FAIOLA) 15 June 2006 (15.06.2006) entire document generally	1-5
A	US 2006/0168743 A1 (HOMER) 3 August 2006 (03.08.2006) entire document generally	1-5
A	US 4,742,836 A (BUEHLER) 10 May 1988 (10.05.1988) entire document generally	1-5
A	US 4,812,070 A (MARTY) 14 March 1989 (14.03.1989) entire document generally	1-5

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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 July 2009 (17.07.2009)	22 JUL 2009
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)