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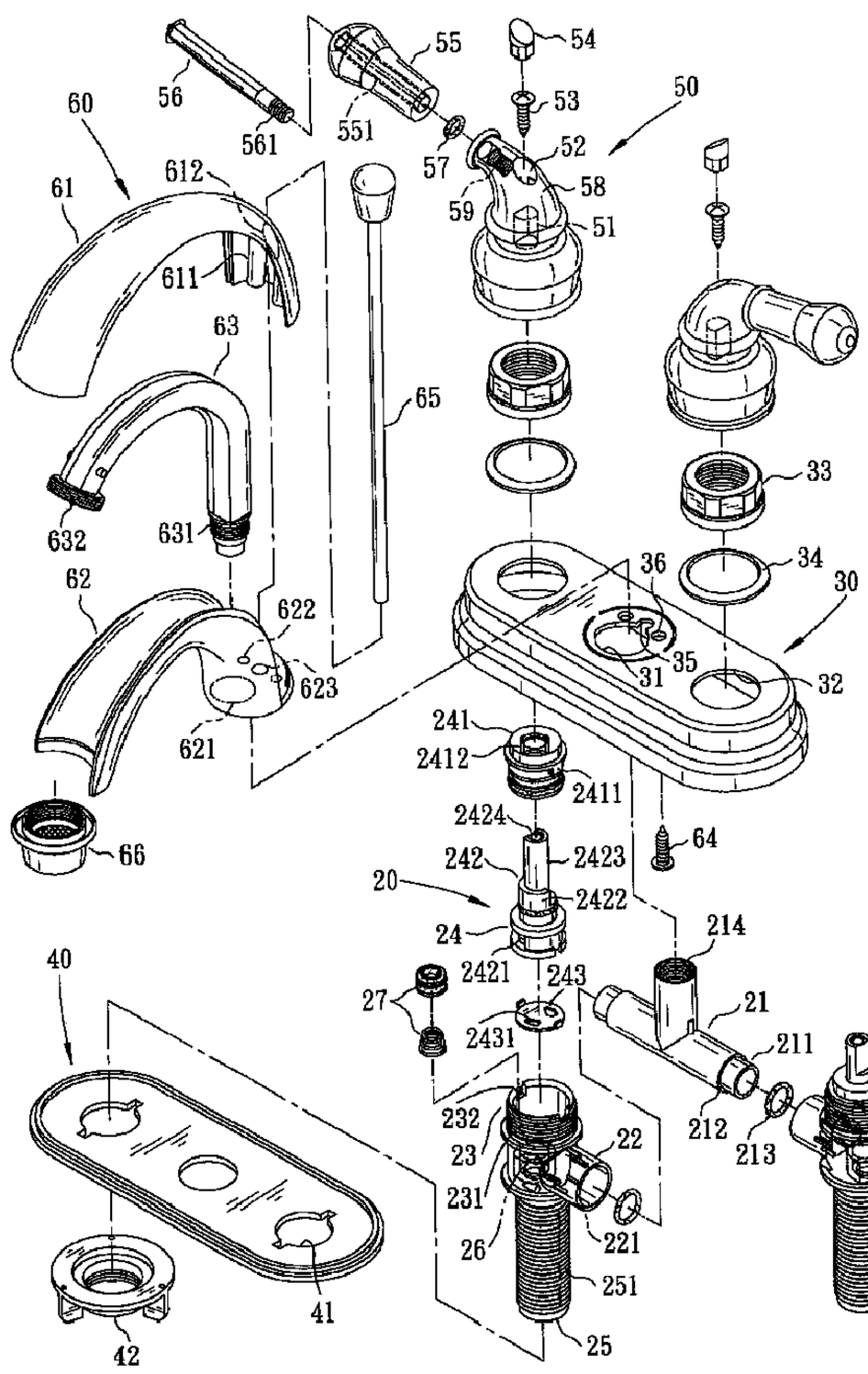
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(54) Title: FAUCET STRUCTURE



(57) Abrégé/Abstract:
A faucet structure comprises a valve body having outlet coupling tubes, accommodating tubes, and inlet ducts that are fluidly connected and fixed between a mount having an opening, fixing holes, a clearance recess, and through holes, and a covering

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(57) Abrégé(suite)/Abstract(continued):
board equipped with thru-holes thereon. The valve body also has a connecting tube extending in the middle section wherein the connecting tube has coupling ends protruding at both sides to join to the outlet coupling tubes, and an assembly section extending in the middle to lock to a spout of a water-supply seat thereby. The valve body has a water-flow control valve received into each accommodating tube therein to match to a handle seat equipped with a grip. The water-supply seat having a set of upper and lower housings to house the spout therein is firmly locked to the middle section of the mount thereon, achieving easy and flexible assembly thereby.

ABSTRACT OF THE DISCLOSURE

A faucet structure comprises a valve body having outlet coupling tubes, accommodating tubes, and inlet ducts that are fluidly connected and fixed between a mount having an opening, fixing holes, a clearance recess, and through holes, and a covering board equipped with thru-holes thereon. The valve body also has a connecting tube extending in the middle section wherein the connecting tube has coupling ends protruding at both sides to join to the outlet coupling tubes, and an assembly section extending in the middle to lock to a spout of a water-supply seat thereby. The valve body has a water-flow control valve received into each accommodating tube therein to match to a handle seat equipped with a grip. The water-supply seat having a set of upper and lower housings to house the spout therein is firmly locked to the middle section of the mount thereon, achieving easy and flexible assembly thereby.

FAUCET STRUCTURE

BACKGROUND OF THE INVENTION

The present invention relates to a faucet structure, comprising a faucet molded of plastic material wherein the assembly parts thereof can be freely molded into various colors without the complicated steps of processing such as polishing, finishing, and lacquering, etc., economically reducing the cost of material and production thereby; besides, the faucet is equipped with a valve body having a detachably-mounted connecting tubes with coupling ends, facilitating easy and convenient assembly and dismantling thereby.

Please refer to Fig. 1 showing an exploded perspective view of a conventional faucet structure. A faucet 10 includes an integrally-molded and H-shaped valve body 13 having control valves 131 accommodated therein and fixed between a mount 11 and a covering board 12 there-between. The valve body 13 has a water-flow passage 132 with a coupling tube 133 extending in the middle section thereon. Each control valve 131 of the valve body 13 has one side connected to a handle seat 14. A water-discharge seat 15 is made up of a water-intake duct 151 and a spout 152 wherein the water-intake duct 151 has one end mounted to the coupling tube 133 of the water-flow passage 132 to complete the assembly of the faucet 10 thereby.

However, there are some drawbacks to such conventional faucet structure. First, the faucet 10 is integrally molded, which not only complicates the process of assembling and dismantling thereof but also increases the burden on a washing basin due to its cumbersome volume and heavy weight. Second, the faucet is molded of metallic material. In application, toxic metallic material can easily deposit and mix in the water-flow, which poses a potential danger to users. Third, the control valve

131 of the faucet 10 is made up of complicated assembly parts, which can increase the cost of material as well as the difficulty of assembly and maintenance thereof. Fourth, the faucet 10 is processed and finished with rough inner surfaces as shown in Figs. 2, 3, which, due to the expansion of the pores thereof, can cause limescale deposited thereon and even block the transport of the water flow therein. Furthermore, the valve body 13 of the faucet 10 is fixedly-mounted and must be replaced as a whole, which is quite uneconomical and time-consuming in maintenance.

SUMMARY OF THE PRESENT INVENTION

It is, therefore, the primary purpose of the present invention to provide a faucet structure wherein the faucet is molded of plastic material and its assembly parts thereof are finished with fine pores and smooth inner and outer surfaces to avoid the deposit of toxic metallic material attached thereto so that water flow can be smoothly transported without any limescale accumulated therein, achieving good hygiene and environmental safety thereby.

It is, therefore, the second purpose of the present invention to provide a faucet structure wherein the faucet, molded of plastic material, can be freely processed into various colors without the complicated steps of processing such as polishing, finishing, and lacquering, etc., reducing the cost of material and production to boost the economical efficiency thereby.

It is, therefore, the third purpose of the present invention to provide a faucet structure wherein the faucet is equipped with a valve body having a detachably-mounted connecting tubes with coupling ends so that the valve body can be easily dismantled for cleaning or replaced in assembly parts, providing a lighter

faucet structure to cut down the burden on a washing basin, and facilitating convenient and flexible application of the present invention thereby.

It is, therefore, the fourth purpose of the present invention to provide a faucet structure wherein an accommodating tube having a threaded tube with abutment ringed flanges, and an inlet duct having an internal-threaded section with a conjoining section can be separately molded and mounted to each other, facilitating easier assembly and replacement thereof to fit to the economical and environmental benefits thereby.

It is, therefore, the fifth purpose of the present invention to provide a faucet structure wherein the inlet duct has an oblique guide slope cut at one internal end edge thereon; whereby, when the inlet duct is connected to a locking head of an inlet pipe, a water-sealing ring will simultaneously abut tight and close against the end edge and the guide slope of the inlet duct, precisely reinforcing the security of the connection so as to bear the force of water pressure and achieve accurate watertight benefit thereby.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded perspective view of a conventional faucet structure.

Fig. 2 is an assembled cross sectional view of the conventional faucet structure.

Fig. 3 is another assembled cross sectional view of the conventional faucet structure.

Fig. 4 is an exploded perspective view of the present invention.

Fig. 5 is an assembled cross sectional view of the present invention.

Fig. 6 is another assembled cross sectional view of the present invention.

Fig. 7 is an exploded perspective view of another embodiment of the present invention.

Fig. 8 is an assembled perspective view of another embodiment of the present invention.

Fig. 9 is an exploded perspective view of a third embodiment of the present invention.

Fig. 10 is an assembled perspective view of the third embodiment of the present invention.

Fig. 11 is an exploded perspective view of a fourth embodiment of the present invention.

Fig. 12 is an assembled cross sectional view of the present invention in Fig. 11.

Fig. 13 is another exploded perspective view of the present invention in Fig. 12.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please refer to Fig. 4 showing an exploded perspective view of the present invention. The present invention relates to a faucet structure, comprising a faucet molded of high-and-low-temperature resistant plastic material wherein the faucet is equipped with an H-shaped valve body 20 having a movably-mounted connecting tube 21 extending in the middle section thereon. The connecting tube 21 has a set of coupling ends 211 protruding at both sides thereon, and each coupling end 211 equipped with a stop face 212 is joined to a watertight ring 213 and an outlet coupling tube 22 respectively. The outlet coupling tube 22 has multiple ribs 221 annularly arranged and spaced out at the internal surface thereon so that the watertight ring 213 can be precisely sandwiched between the stop face 212 and the ribs 221 and restricted in position thereby. Moreover, the outlet coupling tube 22 has both upper and lower end sides respectively connected to an accommodating tube 23 defined by an external-threaded locking section 231 and an inlet duct 25 equipped with an outer-threaded locking section 251 thereon. The connecting tube 21 has an assembly

section 214 with an internal-threaded hole extending in the middle section thereon to match to an opening 31 disposed in the middle section of a mount 30, and to fluidly connect to the coupling ends 211 extending at both sides thereof. A water-flow control valve 24 is received into the accommodating tube 23 therein and equipped with a fixing member 241 having positioning flanges 2411 extending thereon to mount to a regulating member 242 defined by water-guiding apertures 2421 thereon, permitting a limiting plate 2412, 2422 respectively extending at the preset position of the fixing member 241 and the regulating member 242 thereon to precisely abut against each other thereby. Moreover, the positioning flanges 2411 are allowed to reciprocally engage with insert recesses 232 cut at the opening edge of the accommodating tube 23 thereon. The regulating member 242 has a guide plate 243 with orifices 2431 defining thereon fixed at one side thereon to precisely match to the water-guiding apertures 2421 thereby. The inlet duct 25 and the accommodating tube 23 have a conjoining section defined by a port 26 into which an elastic water-sealing collar 27 is accommodated to match to the orifices 2431 of the guide plate 243 thereby. The mount 30 has a set of fixing holes 32 symmetrically arranged at both sides of the opening 31 thereon for the extension of each accommodating tube 23 of the valve body 20 there-through respectively, permitting the external-threaded locking section 231 of the accommodating tube 23 to reciprocally secure to an internal-threaded locking element 33 with a washer 34 and firmly fix onto the mount 30 thereby. A covering board 40 equipped with thru-holes 41 to match to the fixing holes 32 of the mount 30 is provided for the extension of the inlet duct 25 there-through, permitting the outer-threaded locking section 251 to join to an inner-threaded locking element 42 and fixedly secure onto the covering board 40 thereby. The regulating member 242 has a positioning shaft 2423 defined by an internal-threaded fixing hole 2424 protruding at one side therein to mount to a

limiting groove 51 of a handle seat 50 thereby. The handle seat 50 also includes a linkage section 58 disposed opposite to the limiting groove 51 and having a bore 52 extending there-through for the mounting of a screw 53 guided to secure onto the fixing hole 2424 and stopped by a decorative plug 54 disposed at the top. The linkage section 58 is molded into an arched shape having an internal-threaded fitting hole 59 indented at one end thereon. A crown-topped and tapered cylindrical grip 55 has a fixing passage 551 extending there-through for the accommodation of a securing member 56 equipped with an external-threaded locking end 561 that is guided to pass through a waterproof ring 57 and firmly lock onto the fitting hole 59 of the linkage section 58 thereby. The opening 31 of the mount 30 has a clearance recess 35 cut at an appropriate position of one side with a set of through holes 36 disposed at both adjacent sides of the clearance recess 35 thereon. A set of upper and lower housings 61, 62 is provided to house a spout 63 therein and reciprocally combine to form a water-supply seat 60 thereby wherein the spout 63 is matched to the upper and lower housings 61, 62 and curved into an arcuate hooked shape. The upper housing 61 has a set of internal-threaded fixing posts 611 symmetrically extending at the appropriate positions of one side surface with a lift-rod hole 612 extending through the middle section thereon. The lower housing 62 has one base surface appropriately equipped with an opening 621, a set of through holes 622 and a clearance hole 623 to respectively match to those of the mount 30 thereby. The spout 63 has both ends respectively equipped with an external-threaded fixing portion 631, 632, permitting one fixing portion 631 to pass through the openings 621, 31 of the lower housing 62 and the mount 30 respectively and securely lock to the assembly section 214 of the connecting tube 21 thereof. And, the upper and lower housings 61, 62 can be reciprocally bound together with the fixing posts 611 matching to the through holes 622 and screws passing through the through holes 36, 622 of the mount 30 and the

lower housing 62 respectively to secure onto the fixing posts 611 thereby. Meanwhile, the lift-rod hole 612 of the upper housing 61 is precisely matched to the clearance hole 623 of the lower housing 62 and the clearance recess 35 of the mount 30 for the extension of a lift rod 65 there-through. The spout 63 has the other external-threaded fixing portion 632 locked to an inner-threaded nozzle 66 and secured onto one conjoining end edge of the upper and lower housings 61, 62 thereof.

Please refer to Fig. 5 showing an assembled cross sectional view of the present invention (accompanied by Fig. 6). The faucet of the present invention is molded of plastic material so that the assembly parts thereof can be processed and finished with smooth inner and outer surfaces so that limescale won't get deposited on the assembly parts and good hygiene can be maintained for the safety of application thereof. In addition, the valve body 20 equipped with the connecting tube 21 is flexibly mounted in a detachable-type assembly, which enables a user to dismantle or assemble the valve body 20 as desired in an easy and convenient manner. Moreover, the present invention molded of plastic material can avoid the complicated steps of processing such as polishing, finishing, and lacquering, etc. as found in the conventional faucet structure, efficiently reducing the cost of production thereby.

Please refer to Fig. 7 showing an exploded perspective view of another embodiment of the present invention (accompanied by Fig. 8). The present invention can also include a water-supply seat 60' equipped with a spout 63' that is matched to a set of upper and lower housings 61', 62' and molded into a consecutive arched shape in a magic lamp-like configuration.

Please refer to Fig. 9 showing an exploded perspective view of a third embodiment of the present invention (accompanied by Fig. 10). The present invention can also include a water-supply seat 60" equipped with a spout 63" that is matched to a set of upper and lower housings 61", 62" and curved into a smooth arch

in an inverted pipe-like configuration. In addition, a handle seat 50' is provided with a linkage section 51' molded into a T shape with an internal-threaded bore 52' indented at one side thereon. A grip 53', molded into a tapered shape with multiple different-angled diamond-facets cut at the circumferential surface thereon, is equipped with an external-threaded rod 54' protruding at one side thereon, permitting the internal-threaded bore 52' of the linkage section 51' thereof to firmly secure to the external-threaded rod 54' of the grip 53' thereby.

Please refer to Fig. 11 showing an exploded perspective view of a fourth embodiment of the present invention (accompanied by Fig. 12). The present invention can also include an inlet duct 25' detachably mounted to an accommodating tube 23' equipped with an outlet coupling tube 22'. The accommodating tube 23' also has a larger-diameter stop flange 231', and a smaller-diameter threaded tube 232' extending downwards at the bottom side. The threaded tube 232' has an annular groove 233' indented at an appropriate position thereon for the accommodation of a watertight ring 234' therein to form a set of abutment ringed flanges 235' extending at both sides thereon. The inlet duct 25', molded of copper element, is equipped with a polygonal tool notch 251' indented at the interior of one end thereon, and an oblique guide slope 252' cut at the internal end edge thereon. The inlet duct 25' has the interior of the other end equipped with a conjoining section 253', an internal-threaded section 254', and an oblique tapered guide surface 255' disposed between the conjoining section 253' and the internal-threaded section 254' thereof. Thus, the threaded tube 232' of the accommodating tube 23' can be mounted from top to bottom into the inlet duct 25, running along the guide surface 255' to securely lock to the internal-threaded section 254' and form the first layer of connection thereby. Then, the abutment ringed flanges 235' of the threaded tube 232' can be tightly coupled with the conjoining section 253' and restricted in position by the guide surface 255' to form

the second layer of connection, achieving securer connection thereby. Meanwhile, the watertight ring 234' is limited in place by the abutment ringed flanges 235' to precisely abut tight and close against the internal wall of the conjoining section 253' thereon. The inlet duct 25' can also have a multiple-toothed insert portion 256' protruding at the end edge of the other side, and the insert portion 256, having the inner edge of the teeth cut into reverse cornered shapes, can be twisted and forced into the inlet duct via a tool accommodated into the tool notch 251' so that the insert portion 256' is allowed to securely grip to the bottom edge of the stop ring 231' to form the third layer of connection. Thus, the inlet duct 25' and the accommodating tube 23' can be firmly connected with strengthened security thereby. Furthermore, when the inlet duct 25' is fixed to a locking head 71 of an inlet pipe 70, a water-sealing ring 72 will simultaneously abut tight and close against the end edge and the oblique guide slope 252' of the inlet duct 25', reinforcing the security of the connection thereof so as to bear the force of water pressure and achieve accurate watertight benefit thereby.

Please refer to Fig. 13 showing an exploded perspective view of the present invention as shown in Fig. 12. The inlet duct 25' can also omit the insert portion 256'. And, the threaded tube 232' of the accommodating tube 23' can have reinforcing ribs 236' extending at the internal surface thereon, and triangular water-intake ports 237' preset therein for the transport of water flow to the outlet coupling tube 22' thereby. The reinforcing ribs 236' are utilized to strengthen the connected inlet duct 25' and the threaded tube 232' as a whole and to boost their durability thereby.

CLAIMS

1. A faucet structure, comprising a valve body equipped with a connecting tube detachably mounted to a middle section of the valve body wherein: the connecting tube is made up of a set of coupling ends and an assembly section and an outlet coupling tube is respectively joined to the coupling ends extending at both sides of the connecting tube; the outlet coupling tube has one end equipped with an accommodating tube having a locking section with a water-flow control valve received therein and another end fluidly connected to an inlet duct having a locking section defined thereon; a mount is equipped with a set of fixing holes symmetrically arranged at both sides thereon through which the accommodating tubes respectively extend; the mount also includes an opening for the assembly section of the connecting tube, a clearance recess for the mounting of a lift rod and through holes for screws; a covering board is provided opposite to the mount and equipped with through holes to match the holes of the mount for extension of the inlet ducts therethrough so that the valve body is allowed to locate between the mount and the covering board, permitting the accommodating tubes and the inlet ducts to extend outwards and be fixed in position by respective locking elements; the water-flow control valve has one side mounted to a handle seat equipped with a grip; an upper housing equipped with a set of fixing posts and a lift-rod hole is bound with a lower housing equipped with an opening, a set of through holes, and a clearance hole so as to house a spout therein and form a water-supply seat therewith wherein the water-supply seat is matched and assembled to the mount with the opening, the clearance recess, and the through holes, and to the connecting tube with the assembly section thereof.

2. The faucet structure as claimed in Claim 1 wherein the faucet is molded of high-and-low-temperature resistant plastic material.

3. The faucet structure as claimed in Claim 1 wherein the coupling end of the connecting tube, equipped with a stop face for the accommodation of a watertight ring thereon, is mounted to the outlet coupling tube of the valve body, and the outlet coupling tube has multiple ribs annularly arranged and spaced out at the internal surface thereon so that the watertight ring is precisely sandwiched between the stop face and the ribs, and restricted in position thereby.

4. The faucet structure as claimed in Claim 1 wherein the locking section of the accommodating tube and the inlet duct can be respectively defined by external threads, each matching and securing to a locking element equipped with an internal-threaded hole thereon.

5. The faucet structure as claimed in Claim 1 wherein the assembly section of the connecting tube has an internal-threaded hole indented at one end side thereon.

6. The faucet structure as claimed in Claim 1 wherein the water-flow control valve is equipped with a fixing member having positioning flanges extending thereon to mount to a regulating member defined by water-guiding apertures thereon, permitting a limiting plate respectively extending at the preset position of the fixing member and the regulating member thereon to precisely abut against each other thereby; moreover, the positioning flanges are allowed to reciprocally engage with insert recesses cut at the opening edge of the accommodating tube thereon; the regulating member has a guide plate with orifices defining thereon fixed at one side to precisely match to the water-guiding apertures thereby; the inlet duct and the accommodating tube have a

conjoining section defined by a port into which an elastic water-sealing collar is accommodated to match to the orifices of the guide plate thereby.

7. The faucet structure as claimed in Claim 6 wherein the regulating member has one side equipped with a positioning shaft defined by an internal-threaded fixing hole therein.

8. The faucet structure as claimed in Claim 1 wherein the handle seat has a limiting groove indented at one side thereon, and a linkage section disposed opposite to the limiting groove with a bore extending there-through to which a screw topped by a decorative plug is mounted; the linkage section also includes an internal-threaded fitting hole indented at one end side thereon to match to a grip wherein the grip has a fixing passage extending there-through for the accommodation of a securing member equipped with an external-threaded locking end that is guided to pass through a waterproof ring and firmly lock to the fitting hole of the linkage section thereby.

9. The faucet structure as claimed in Claim 8 wherein the grip is molded into a crown-topped and tapered cylindrical shape.

10. The faucet structure as claimed in Claim 8 wherein the linkage section of the handle seat is molded into an arched shape.

11. The faucet structure as claimed in Claim 8 wherein the linkage section of the handle seat can also be molded into a T-shaped configuration.

12. The faucet structure as claimed in Claim 11 wherein the linkage section of the handle seat has an internal-threaded bore indented at one side thereon, and a grip has an external-threaded rod protruding at one side thereon, permitting the internal-threaded bore of the linkage section to securely lock to the external-threaded rod of the grip thereby.

13. The faucet structure as claimed in Claim 12 wherein the grip, molded into a tapered shape, has multiple different-angled diamond-facets cut at the circumferential

surface thereon.

14. The faucet structure as claimed in Claim 1 wherein the spout is matched to the upper and lower housings and molded into an arcuate hooked shape.

15. The faucet structure as claimed in Claim 1 wherein the fixing posts of the upper housing are respectively defined by an internal-threaded hole therein to which screws are fixed to lock the upper housing onto the mount thereby.

16. The faucet structure as claimed in Claim 1 wherein the spout has both ends respectively equipped with an external-threaded fixing portion, permitting one fixing portion to securely lock to the assembly section of the connecting tube, and the other fixing portion to secure to an inner-threaded nozzle and fix onto one conjoining end edge of the upper and lower housings thereof.

17. The faucet structure as claimed in Claim 1 wherein the spout can be matched to the upper and lower housings and molded into a consecutive arched magic lamp-like configuration.

18. The faucet structure as claimed in Claim 1 wherein the spout can also be matched to the upper and lower housings and smoothly curved into an inverted pipe-shaped configuration.

19. The faucet structure as claimed in Claim 1 wherein the inlet duct and the accommodating tube equipped with the outlet coupling tube can be molded into a separate-type assembly.

20. The faucet structure as claimed in Claim 19 wherein the accommodating tube has a larger-diameter stop flange and a smaller-diameter threaded tube extending downwards at the bottom side, and the threaded tube has an annular groove indented at an appropriate position thereon for the accommodation of a watertight ring therein to form a set of abutment ringed flanges extending at both sides thereon; the inlet duct, molded of copper element, has a polygonal tool notch indented at the interior of one

end with an oblique guide slope cut at the internal end edge thereon; the inlet duct has the interior of the other end equipped with a conjoining section, an internal-threaded section, and an oblique tapered guide surface disposed between the conjoining section and the internal-threaded section so that the threaded tube of the accommodating tube can be mounted from top to bottom into the inlet duct to securely lock to the internal-threaded section and form the first layer of connection thereby; then, the abutment ringed flanges of the threaded tube can also be tightly coupled with the conjoining section and restricted in position by the guide surface to form the second layer of connection, achieving securer connection thereby; meanwhile, the watertight ring is limited in place by the abutment ringed flanges to precisely abut tight and close against the internal wall of the conjoining section thereon.

21. The faucet structure as claimed in Claim 19 wherein the inlet duct can also have a multiple-toothed insert portion protruding at the end edge of the other side, and the insert portion has the inner edge of the teeth cut into reverse cornered shapes.

22. The faucet structure as claimed in Claim 19 wherein the threaded tube of the accommodating tube can also have reinforcing ribs extending at the internal surface thereon, and triangular inlet ports preset therein for the transport of water flow to the outlet coupling tube thereby.

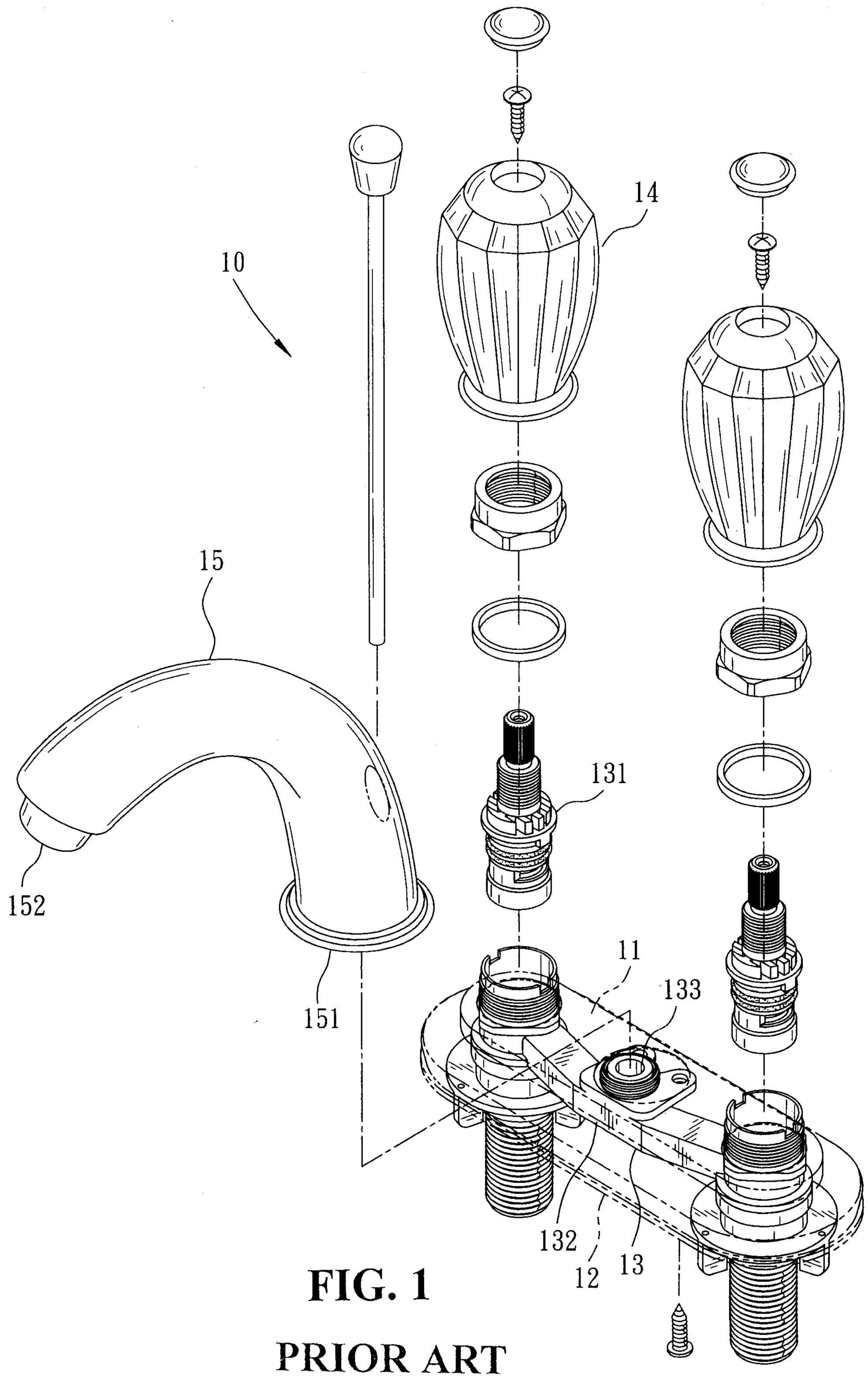


FIG. 1

PRIOR ART

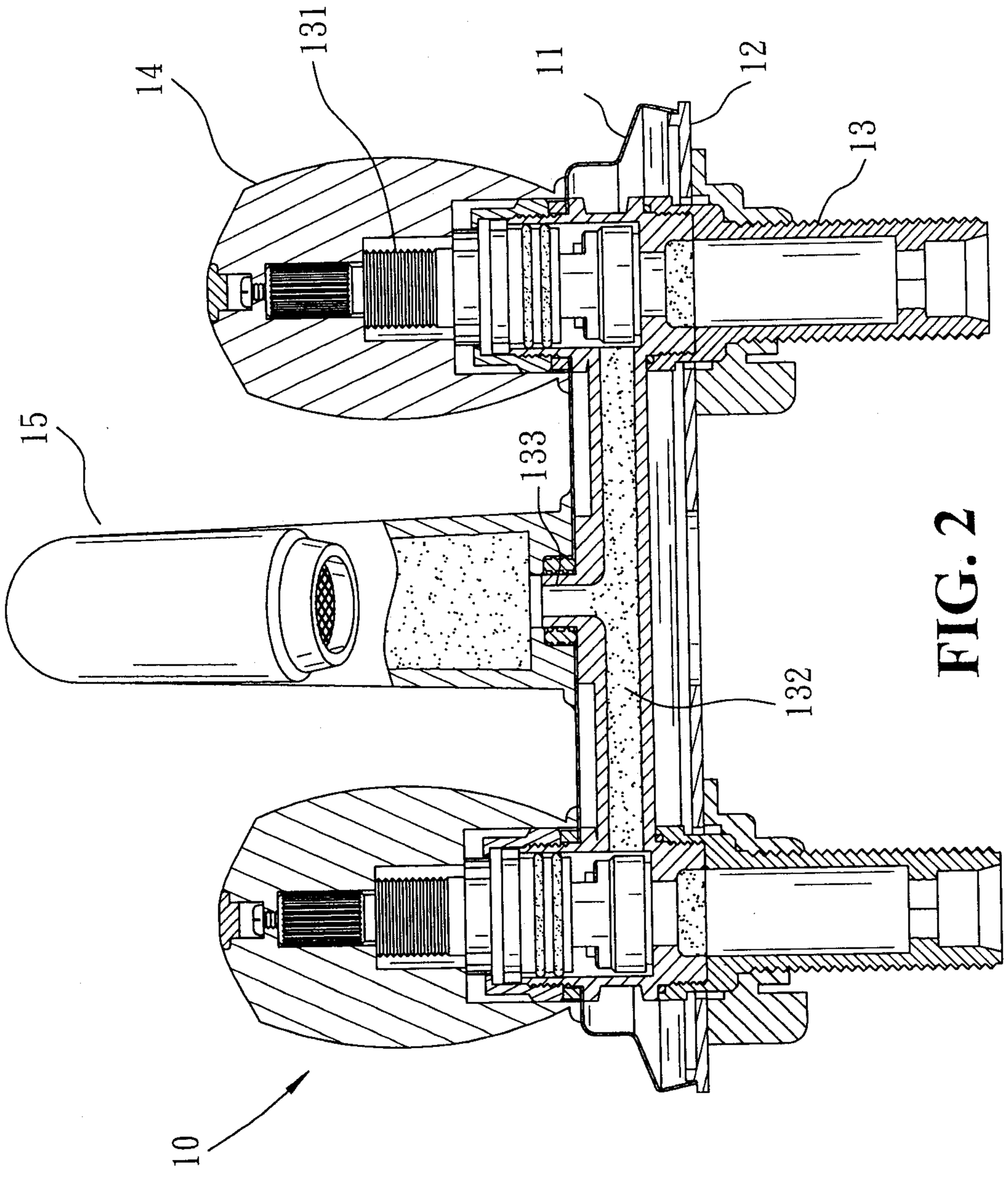


FIG. 2
PRIOR ART

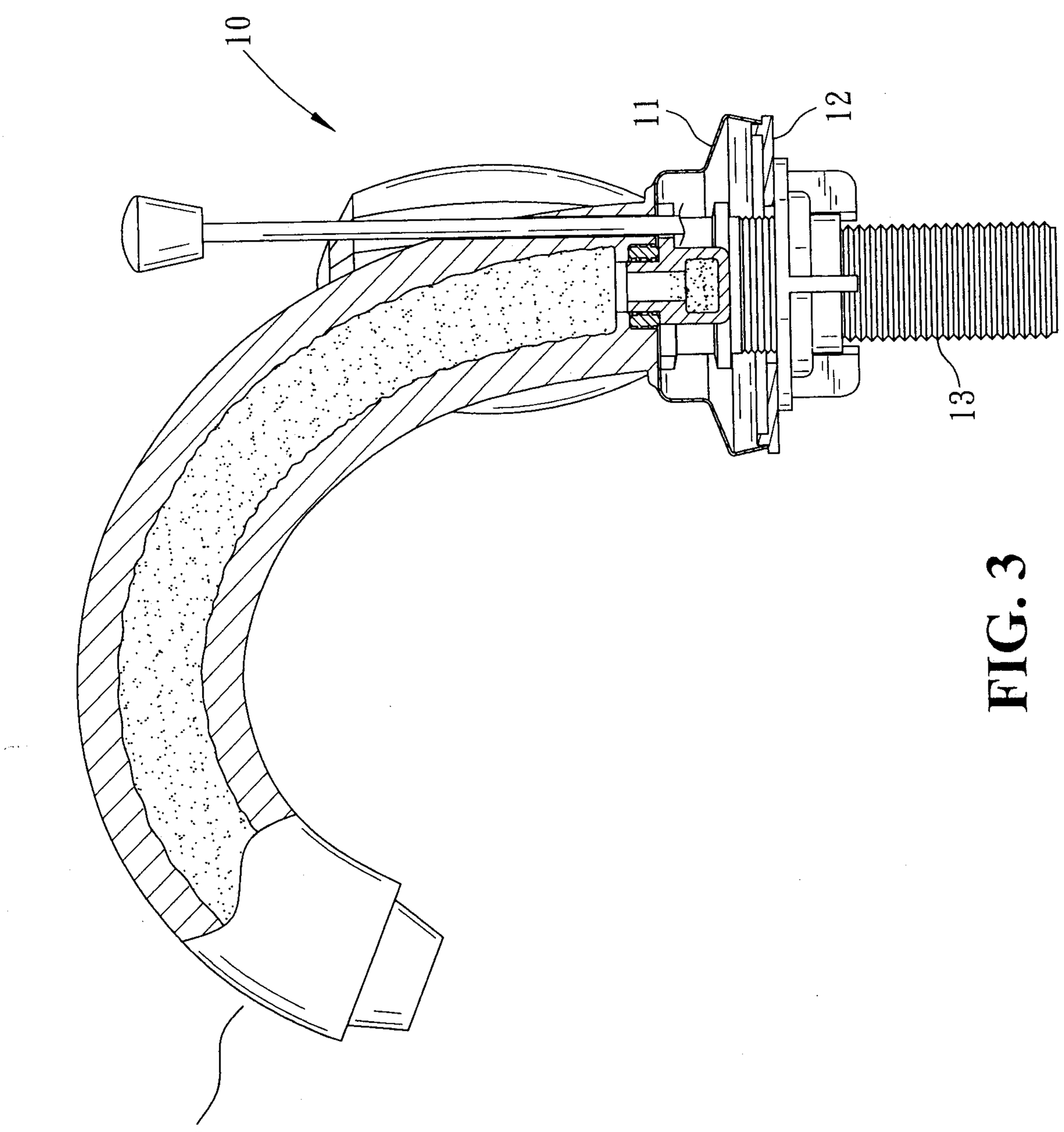


FIG. 3
PRIOR ART

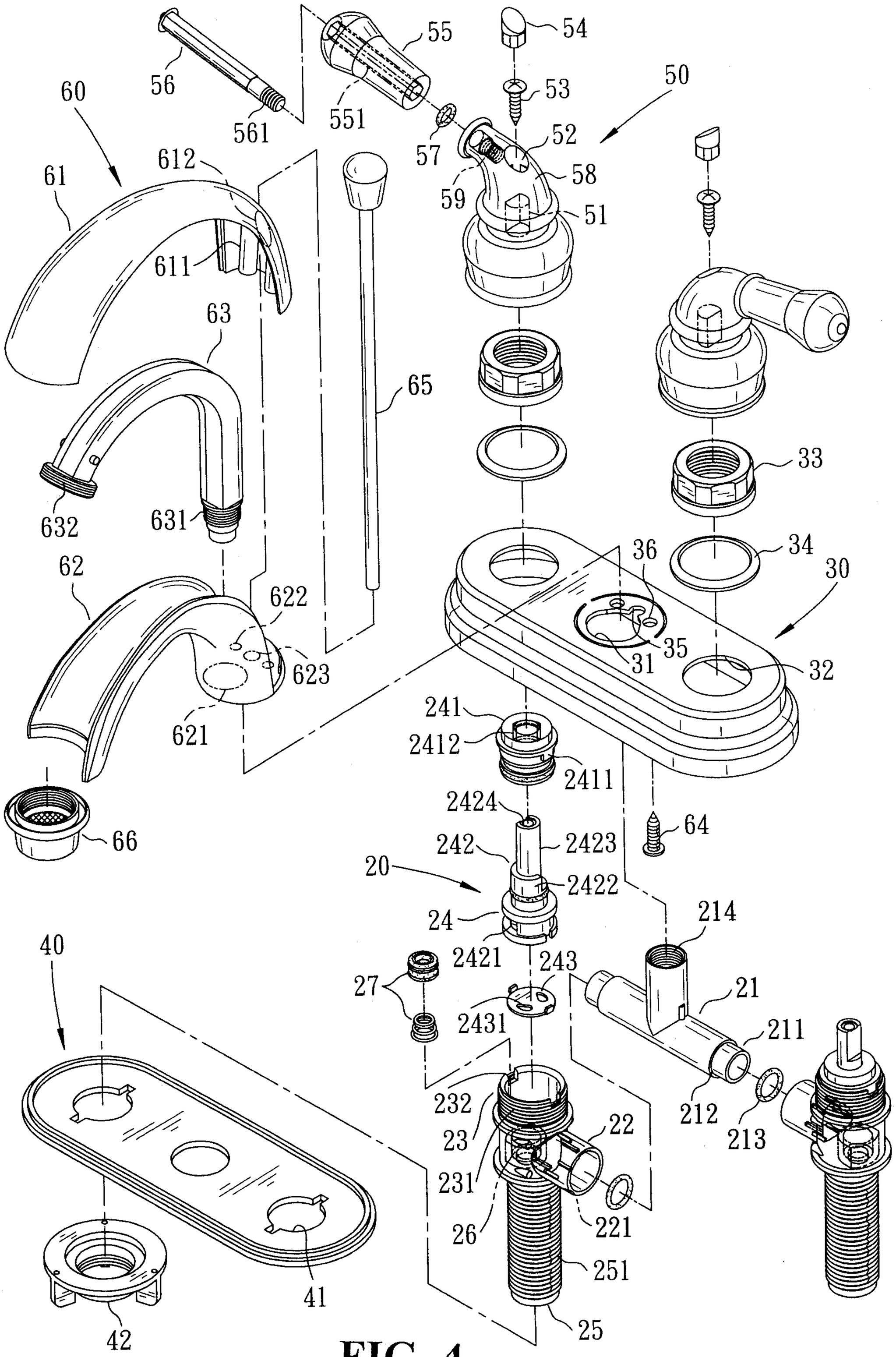

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FIG. 4

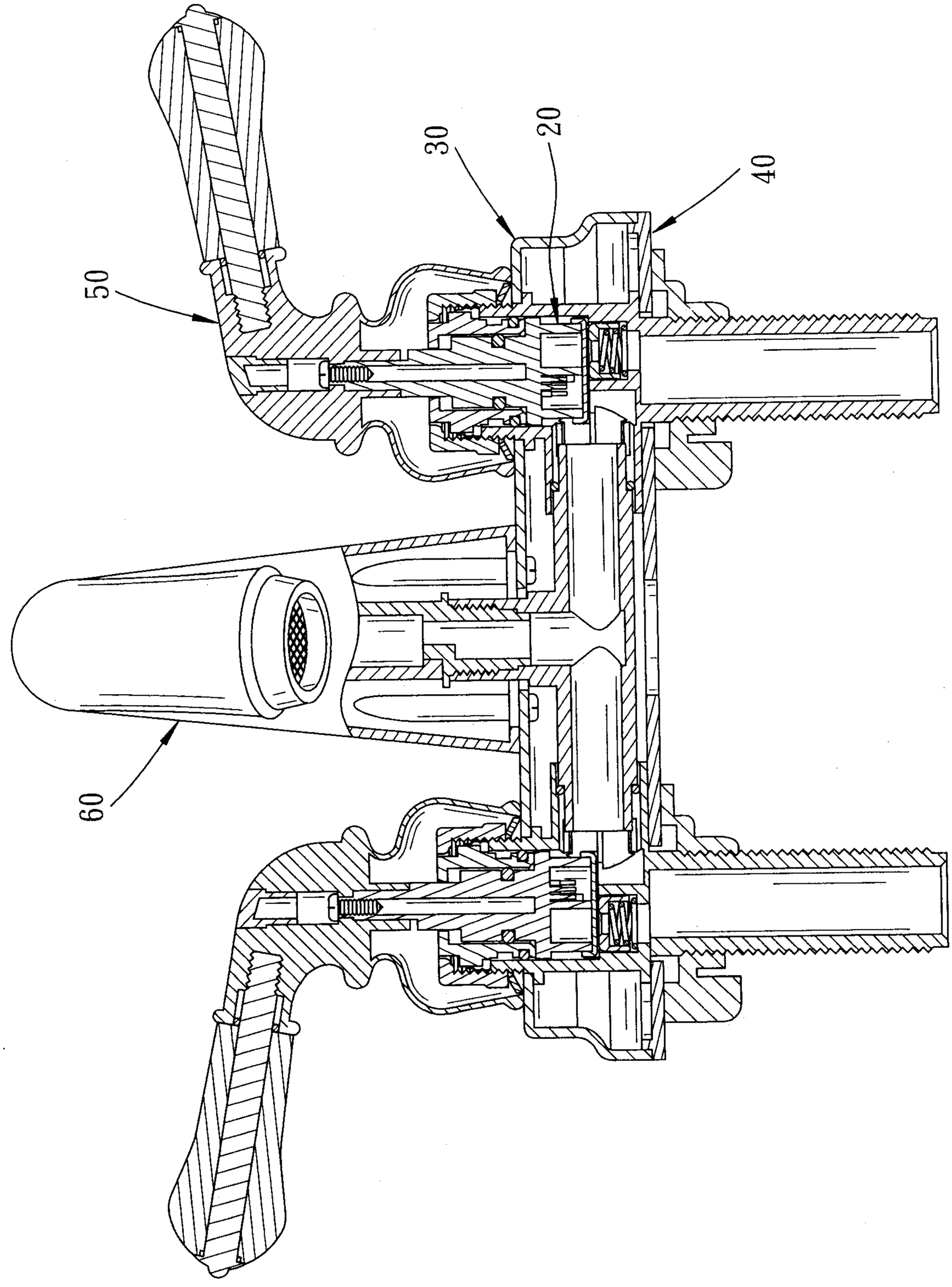


FIG. 5

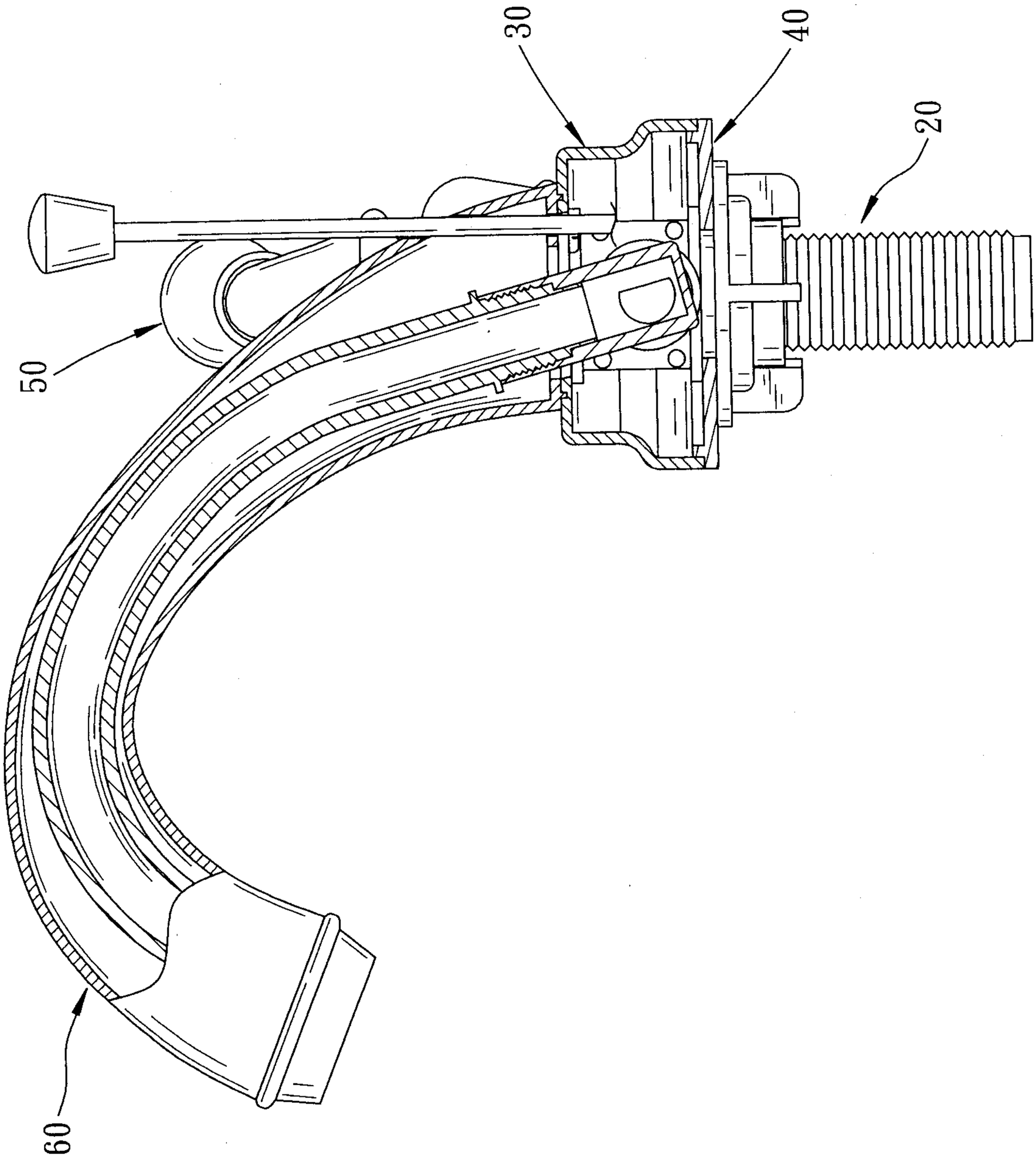


FIG. 6

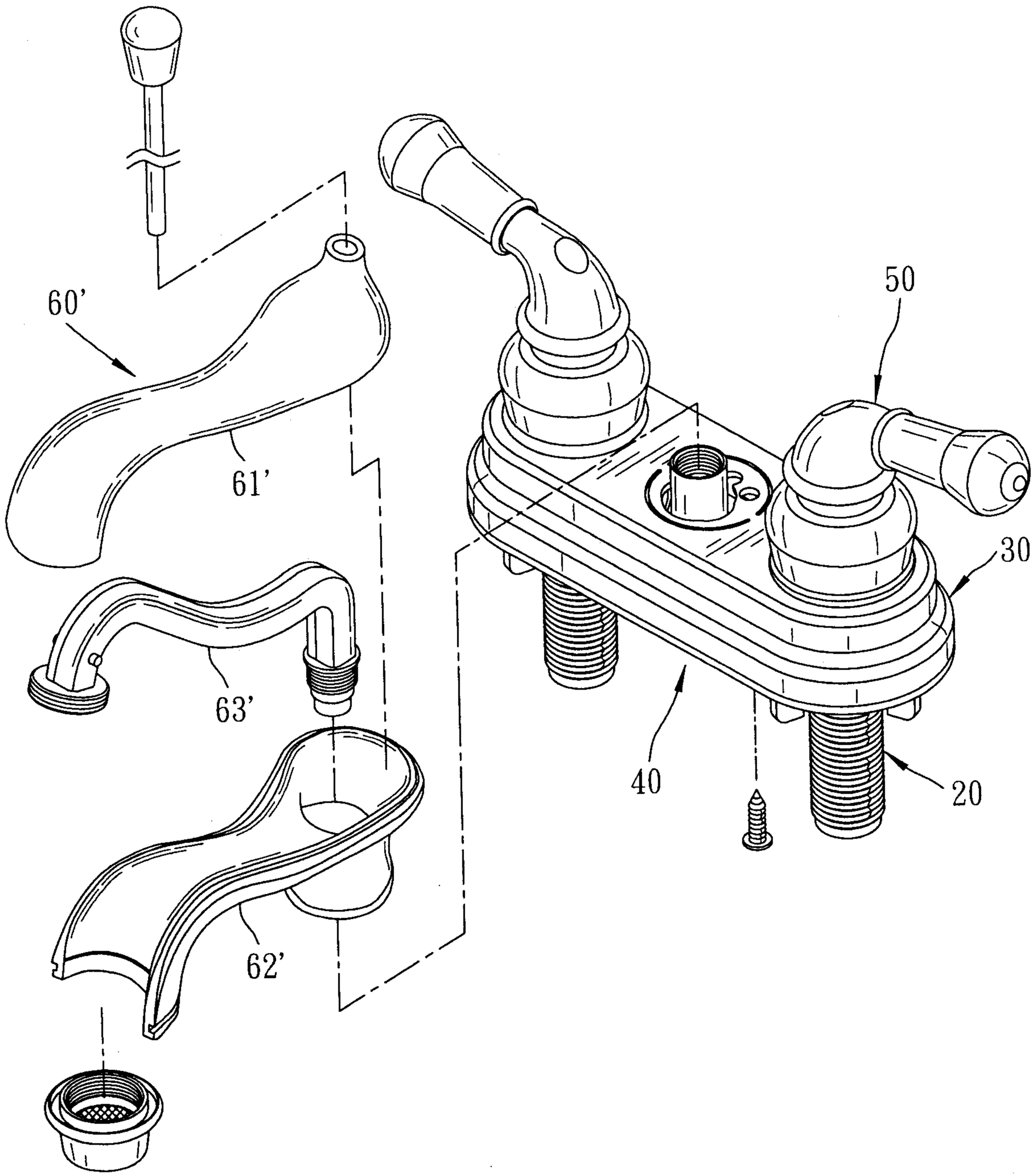


FIG. 7

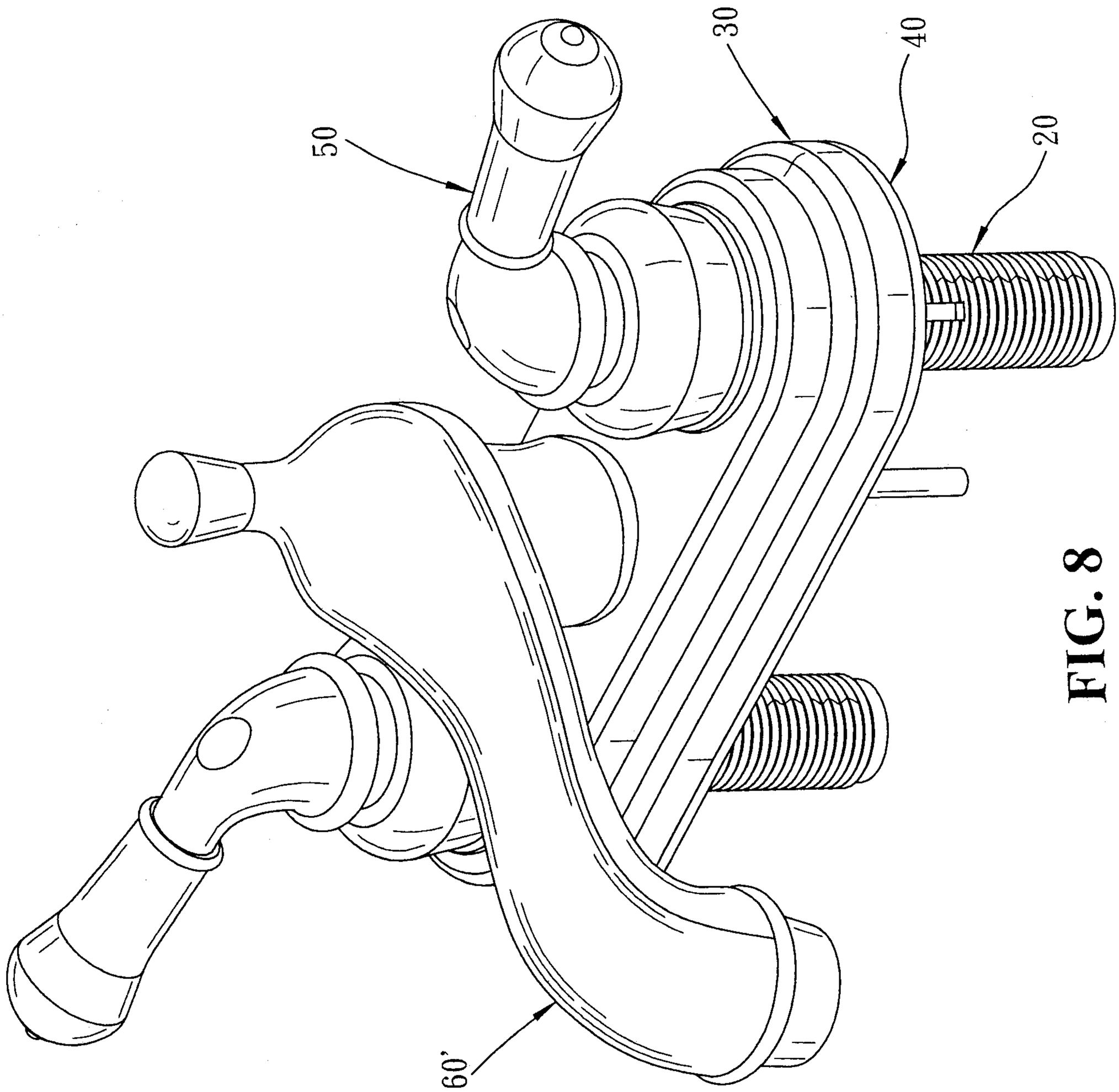


FIG. 8

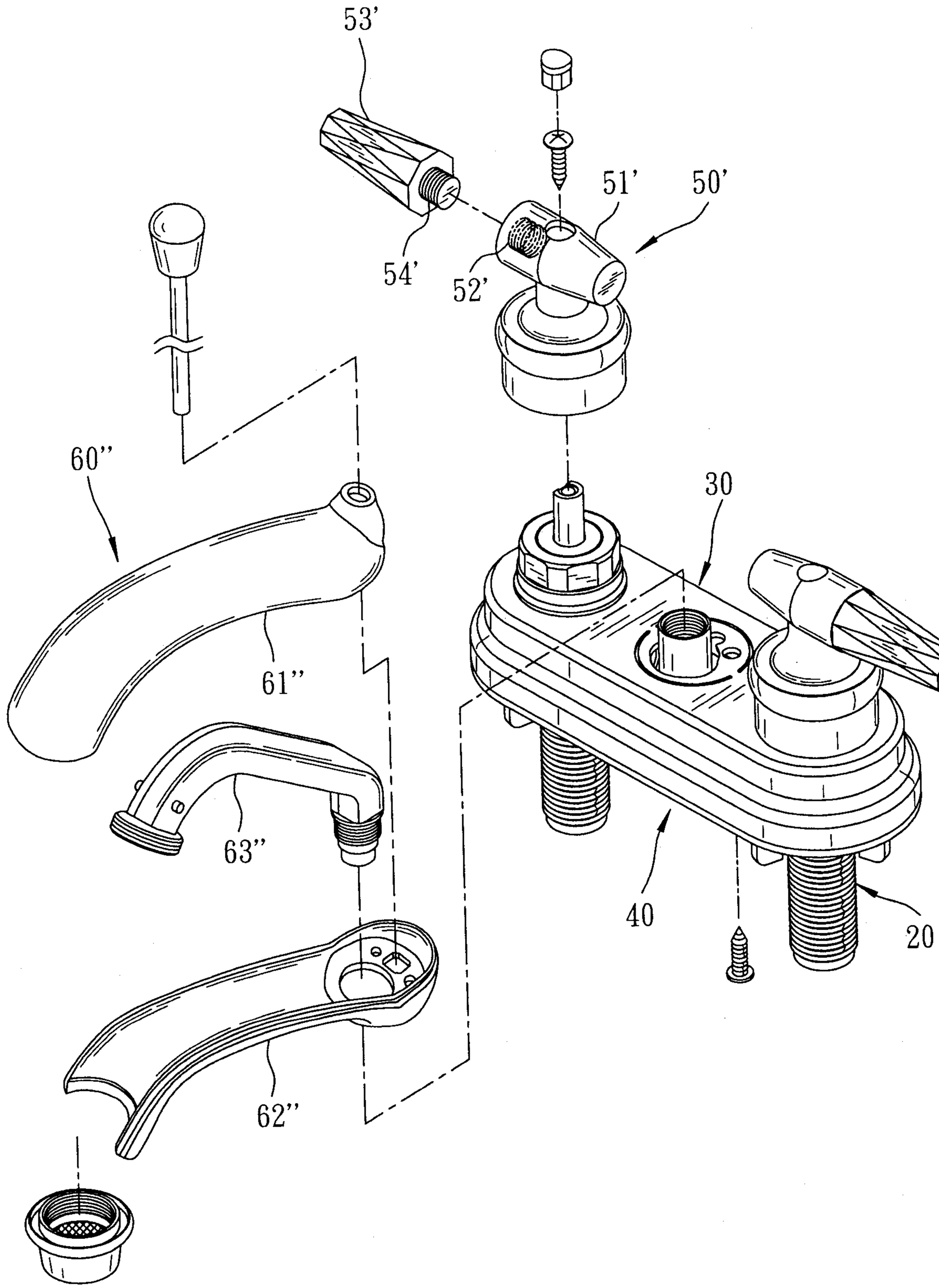


FIG. 9

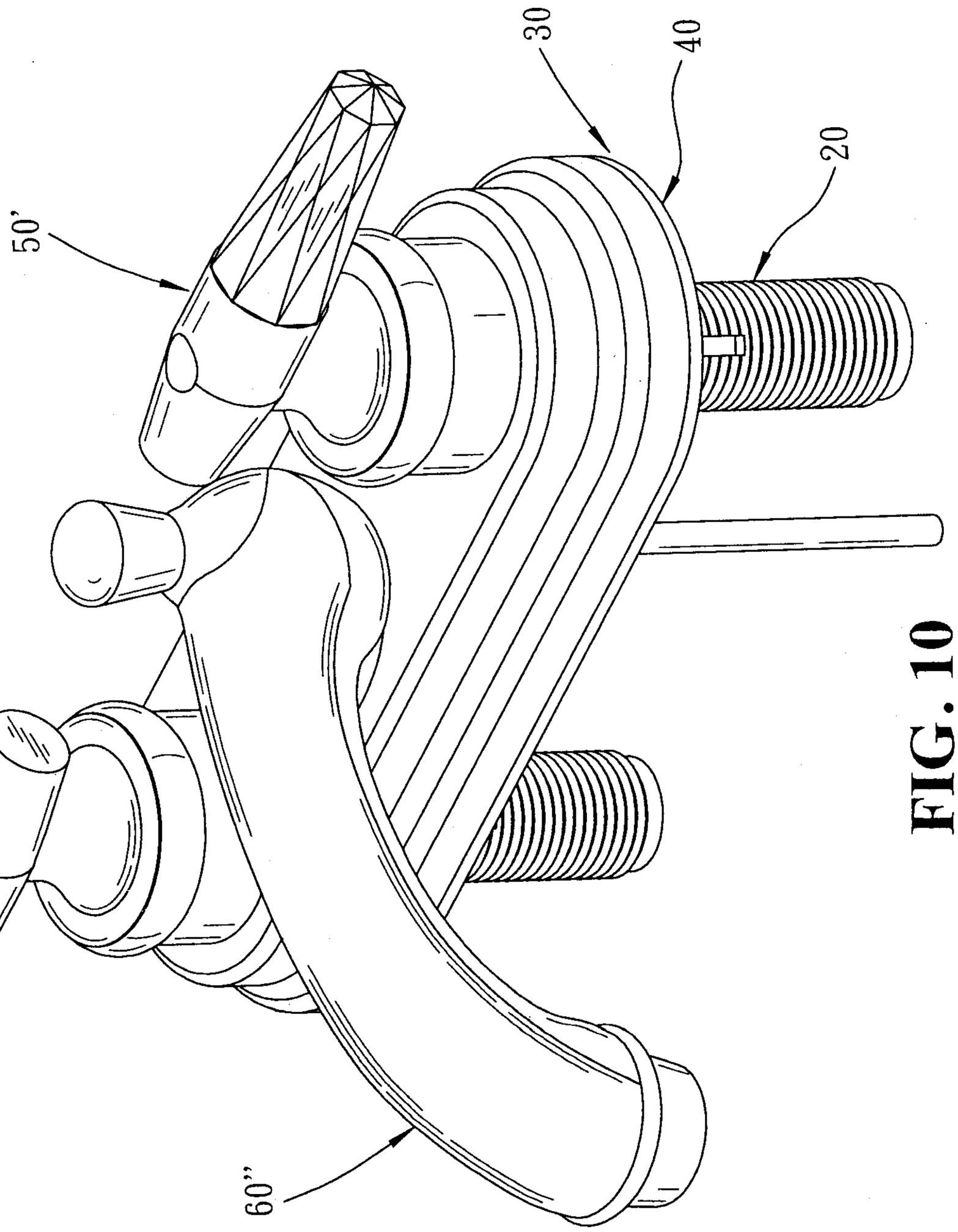


FIG. 10

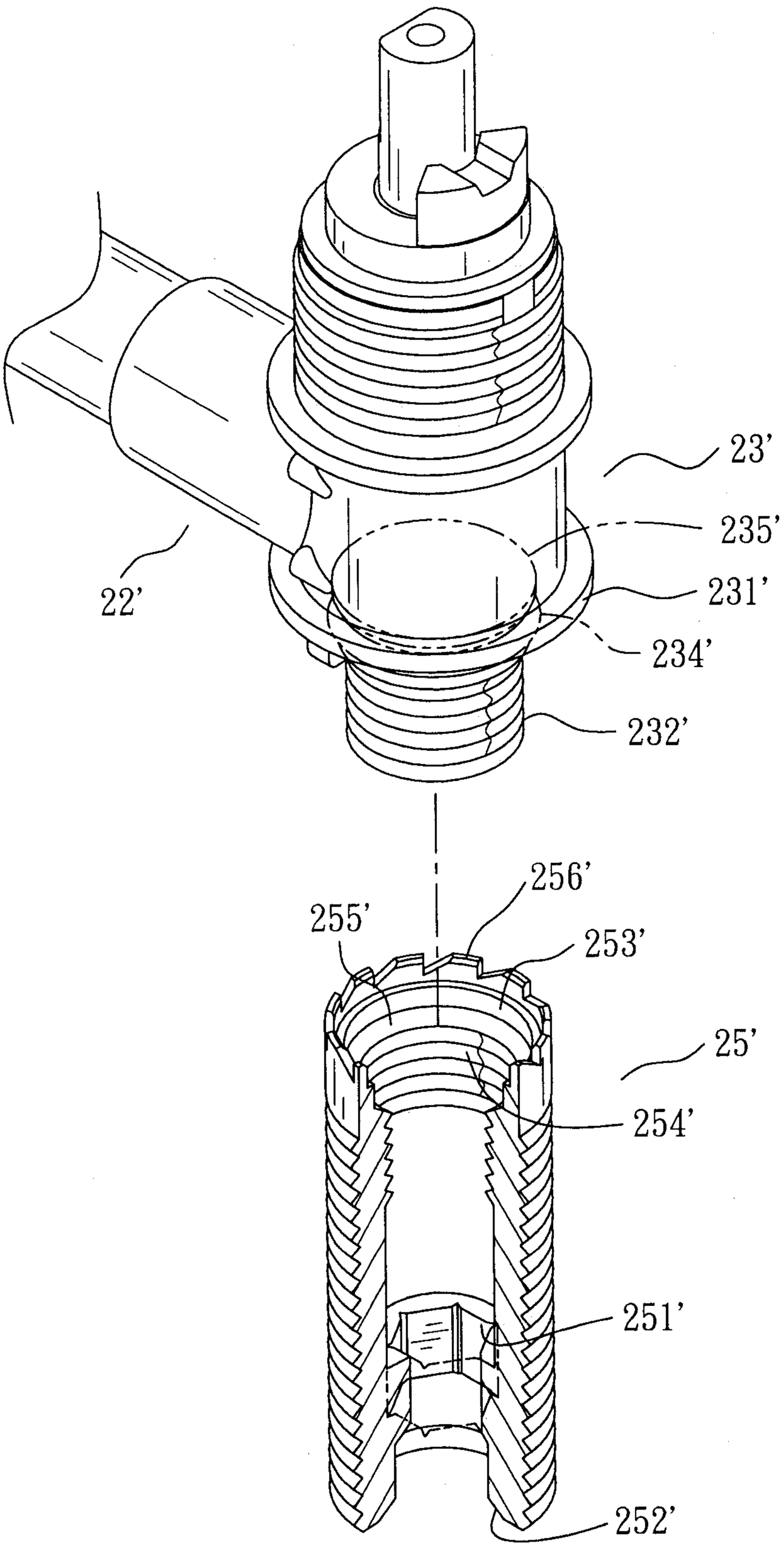


FIG. 11

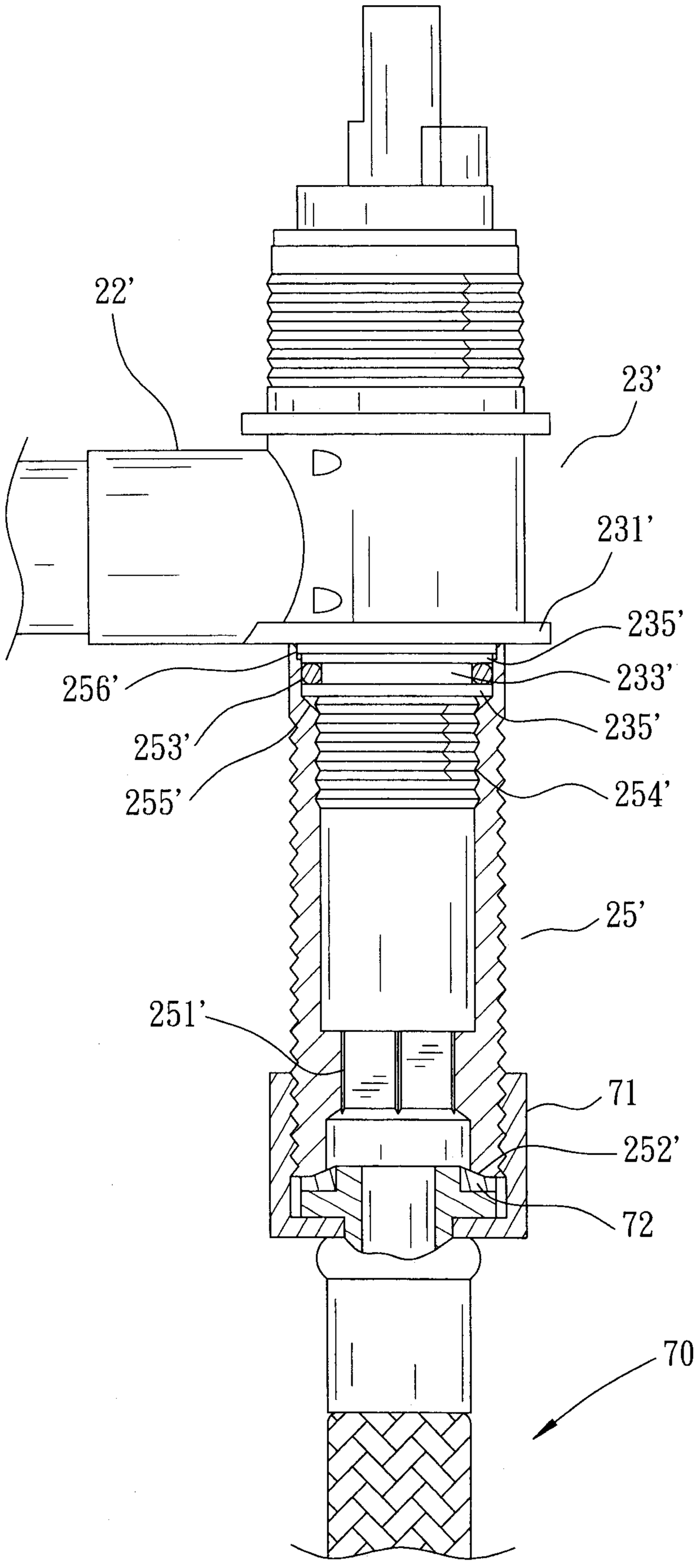


FIG. 12

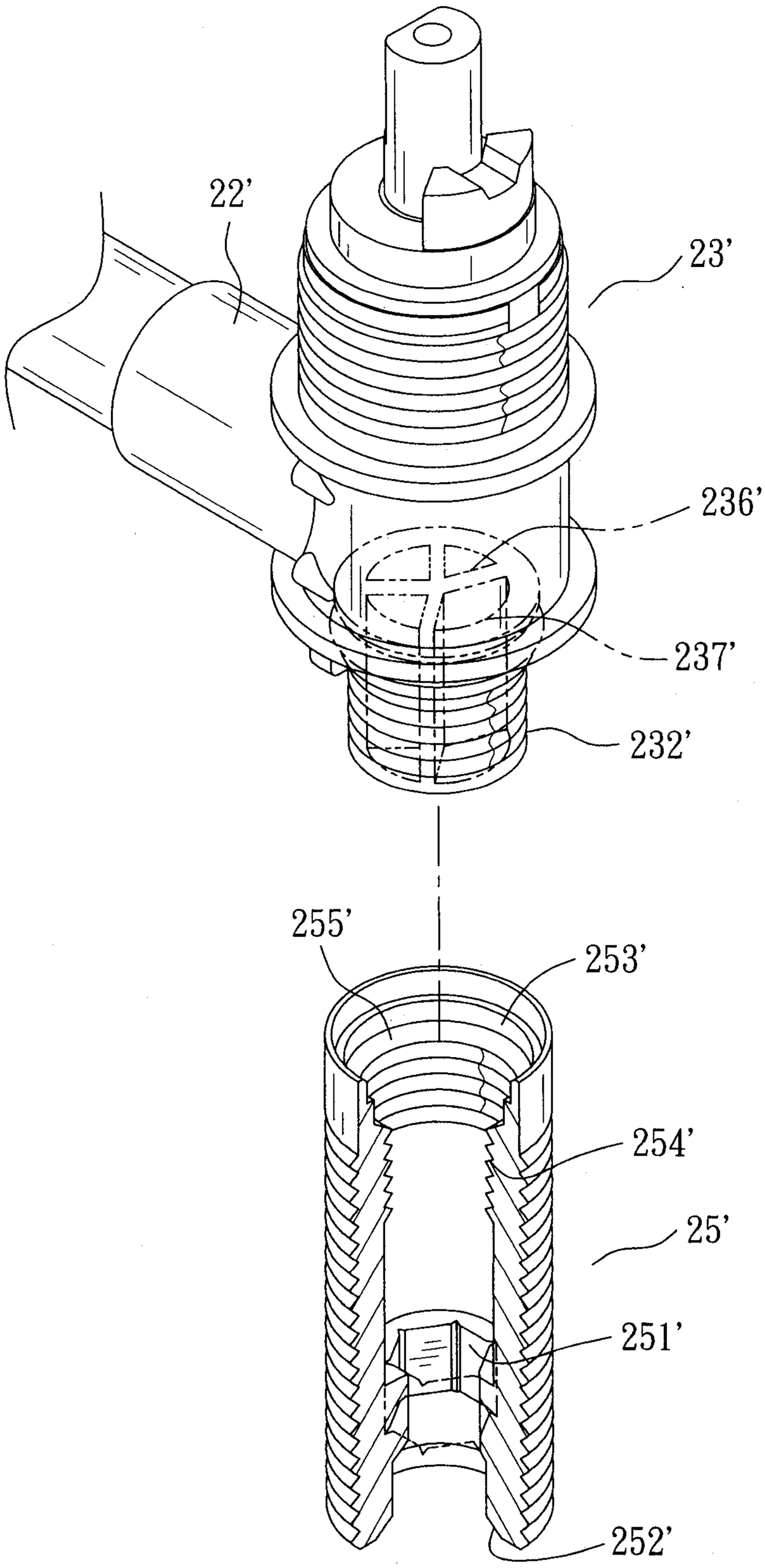
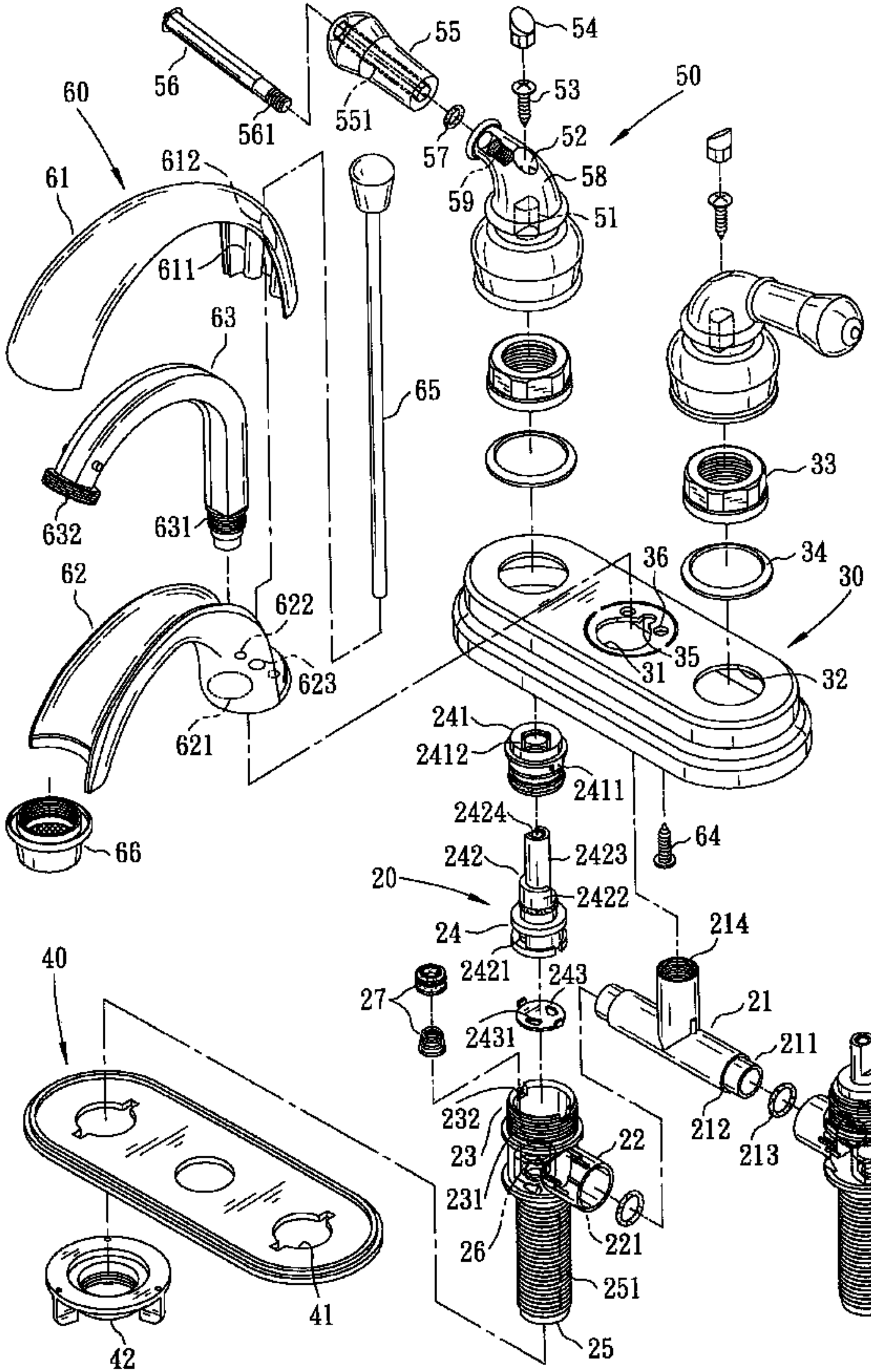


FIG. 13


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