[19]	INTELLECTUAL PROPERTY PHILIPPINES			
[12]	INVENTION PUBLICATION			
[11]	Publication Number:	12014000298	Document Code:	A1
[22]	Publication Date:	2/5/2016		
[21]	Application Number:	12014000298	Document Code:	A
[22]	Date Filed:	24/10/2014		
[54]	Title:	OIL NOZZLE		
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[30]	Priority Data:	11/9/2014 TW20140131420		
[51]	International Class 8:	B67D 7/04 20100101AFI20170209BHPH;		
[57]	Abstract:	An oil nozzle includes an oil sucking tube, an oil filling tube, and an extending tube unit. The oil sucking tube and the oil filling tube are coupled to the extending tube unit. The extending tube unit includes a first tube and a second tube. The first tube intercommunicates with the oil sucking tube. The second tube intercommunicates with the oil filling tube. The first tube is received in the second tube.		

OIL NOZZLE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an oil nozzle and, more particularly, to an oil nozzle including an oil sucking tube and an oil filling tube.

2. Description of the Related Art

Engine oil change per 1000 km is the basic and most common maintenance of motorcycles. Most consumers send their motorcycles to maintenance works and ask a worker to help them change the engine oil. An engine oil change process generally includes: (1) removing a bolt from an oil drain hole to drain the dirty engine oil; (2) leaning the motorcycle leftward to drain the remaining dirty engine oil when the flow of the dirty engine oil becomes smaller; (3) putting the bolt back into the oil drain hole and tightening the bolt; (4) removing a plug from an oil filling port by pliers, and inserting a funnel into the oil filling port; (5) slowing pouring clean engine oil into the funnel; and (6) after filling of the clean engine oil is finished, removing the funnel and putting the plug back into the oil filling port, accomplishing the engine oil change.

However, the troublesome engine oil change process takes about 10-20

minutes, which is inefficient. Furthermore, the skin of the hand of the worker is often stained with the engine oil, which is detrimental to the health after years of working. Further, the engine oil change process is generally conducted in and, thus, restricted by the working hours of the maintenance works, which is not always convenient to the consumers. Further, each engine oil bottle includes a bottle body, a sealing film and at least one label. These packaging materials also incur costs to the consumers in addition to the engine oil and the labor cost of the worker. The total costs per engine oil change are hundreds of new Taiwan dollars. Although the expense may not be a burden to the consumers, the consumers often ignore the importance of regular maintenance of the vehicles and are unwilling to regularly change the engine oil under the pressure of increasing expenses of consumable energy including gasoline. Namely, the consumers would rather drive extra hundreds of kilometers to reduce the average maintenance costs. As a result, the vehicle engines are liable to damage and, thus, have a shortened service life.

FIG. 1 shows a conventional self-help oil changing apparatus 9 including an oil nozzle 91, a dirty oil tank 92, a clean oil tank 93, and an oil pressure control module 94. The oil nozzle 91 includes an outer tube 911, an oil sucking tube 912, and an oil filling tube 913. Each of the oil sucking tube 912

and the oil filling tube 913 is received in the outer tube 911 and has an end extending out of the outer tube 911. The oil pressure control module 94 includes a dirty oil pump 941 and a clean oil pump 942. The dirty oil pump 941 is connected to the oil sucking tube 912 and is in communication with the dirty oil tank 92. The clean oil pump 942 is connected to the oil filling tube 913 and is in communication with the clean oil tank 93. An example of such a self-help oil changing apparatus 9 is disclosed in China Patent Publication No. CN203474434U.

With reference to FIG. 2, when a user is intended to operate the self-help oil changing apparatus 9 to change engine oil of a vehicle, the outer tube 911 of the oil nozzle 91 is inserted into an engine oil tank B of the vehicle such that the ends of the oil sucking tube 912 and the oil filling tube 913 are also placed into the engine oil tank B. When the dirty oil pump 941 operates, a negative pressure is created in the oil sucking tube 912 to suck dirty engine oil in the engine oil tank B to the dirty oil tank 92. On the other hand, when the clean oil pump 942 operates, a negative pressure is applied to the clean oil tank 93 to suck clean engine oil into the oil filling tube 913, thereby filling the clean engine oil into the engine oil tank B, completing the engine oil change process. Thus, the self-help oil changing apparatus 9 can increase the

oil changing efficiency, providing easy operation, and reducing the costs for changing the engine oil.

Both of the oil sucking tube 912 and the oil filling tube 913 of the oil nozzle 91 must be inserted into the engine oil tank B to assure normal operation of the self-help oil changing apparatus 9 in sucking dirty engine oil and filling clean engine oil. However, the ends of the oil sucking tube 912 and the oil filling tube 913 extend out of the outer tube 911 such that the user must adjust the positions of the oil sucking tube 912 and the oil filling tube 913 before inserting the outer tube 911 into the engine oil tank B to assure that both of the oil sucking tube 912 and the oil filling tube 913 have already been inserted into the engine oil tank B, leading to inconvenience during use of the oil nozzle 91. Furthermore, a user not familiar with the self-help oil changing apparatus 9 might actuate the self-help oil changing apparatus 9 when the oil sucking tube 912 or the oil filling tube 913 has not yet been inserted into the engine oil tank B. As a result, the oil sucking tube 912 cannot suck the dirty engine oil, or the clean engine oil splashes outside of the engine oil tank B via the oil filling tube 913, causing trouble to the provider or user of the self-help oil changing apparatus 9.

Furthermore, even if the oil sucking tube 912 and the oil filling tube 913

have been reliably inserted into the engine oil tank B, adjustment of the position of the oil sucking tube 912 may still be required during the dirty engine oil sucking operation to assure the end of the oil sucking tube 912 has reached the bottom of the engine oil tank B for the purposes of maintaining sucking of the dirty engine oil and avoiding suction of air. However, adjustment of the position of the oil sucking tube 912 could cause the oil filling tube 913 to move out of the engine oil tank B. In this case, it is difficult for the user to reinsert the oil filling tube 913 back into the engine oil tank B during dirty engine oil sucking operation, adversely affecting the operational convenience of the oil nozzle 91.

Conclusively, the oil nozzle 91 of the self-help oil changing apparatus 9 having oil sucking tube 912 and oil filling tube 913 separate from the oil sucking tube 912 is inconvenient to use. Thus, a need exists for a novel oil nozzle with increased use convenience to improve the utility and market value of self-help oil changing apparatuses.

SUMMARY OF THE INVENTION

An objective of the present invention is to provide an oil nozzle including a first tube and a second tube, wherein the position of the first tube can be freely adjusted by the user to avoid the second tube from moving out

of the oil tank.

Another objective of the present invention is to provide an oil nozzle including an oil filling tube. The oil filling tube includes a switch element and a stop plate for controlling opening or closing of the oil filling tube, avoiding waste of clean oil and accurately controlling the amount of clean oil that has been filled.

The present invention fulfills the above objectives by providing an oil nozzle including an oil sucking tube, an oil filling tube, and an extending tube unit. The oil sucking tube and the oil filling tube are coupled to the extending tube unit. The extending tube unit includes a first tube and a second tube. The first tube intercommunicates with the oil sucking tube. The second tube intercommunicates with the oil filling tube. The first tube is received in the second tube.

The extending tube unit can further include a connecting member having a first opening, a second opening, and a third opening, with the first, second, and third openings intercommunicating with each other. An end of the oil sucking tube is coupled to the first opening. An end of the oil filling tube is coupled to the second opening. An end of the second tube is coupled to the third opening. The first tube extends through the third opening to the first

opening to couple with the end of the oil sucking tube.

In an example, an outer diameter of the first tube is smaller than the inner diameter of the second tube.

The first tube and the second tube can have a gap therebetween, and a fluid is adapted to flow through the gap.

The oil sucking tube and the oil filling tube can be bendable and deformable hoses, and the first and second tubes can be rigid tubes.

In an example, a length of the first tube beyond the third opening is larger than a length of the second tube beyond the third opening.

The oil filling tube can include a switch element and a stop plate. The stop plate is mounted inside the oil filling tube. The switch element and the stop plate can be operated to control opening or closing of the oil filling tube.

The switch element can include a partitioning board and a control end. The control end is adapted to receive a control signal. The switch element is operable to move the partitioning board towards or away from the stop plate to control opening or closing of the oil filling tube.

The oil filling tube can further include a check valve only allowing flow of the fluid in a direction away from the first tube.

The oil nozzle can further include an actuation switch for generating an

actuating signal. The actuation switch includes an electrical connecting portion. The actuating signal is adapted to be transmitted through the electrical connecting portion to an outside of the oil nozzle.

Operation of the oil nozzle of the embodiment according to the present invention is easy. The first tube of the extending tube unit can also be inserted into an engine oil tank by simply extending the second tube into the engine oil tank, assuring that the first and second tubes are simultaneously inserted into the engine oil tank to reliably increase the use convenience of the oil nozzle.

Furthermore, since the first tube is received in the second tube, the position of the first tube can be freely adjusted by the user without the risk of movement of the second tube out of the engine oil tank. Thus, movement of the second tube out of the engine oil tank can reliably be avoided to avoid adverse effect to the use convenience of the oil nozzle.

Furthermore, the oil filling tube of the oil nozzle of the embodiment according to the present invention further includes a switch element and a stop plate to control opening or closing of the oil filling tube, avoiding the clean engine oil from flowing into the second tube during suction of the dirty engine oil or during standby time while permitting control of the total amount

of the clean engine oil filled into the second tube, reliably avoiding waste of clean engine oil and accurately controlling the amount of the clean engine oil that has been filled.

The present invention will become clearer in light of the following detailed description of illustrative embodiments of this invention described in connection with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a conventional self-help oil changing apparatus.

FIG. 2 is a schematic view illustrating use of an oil nozzle of the self-help oil changing apparatus of FIG. 1 in an engine oil tank of a vehicle.

FIG. 3 is a perspective view of an oil nozzle of an embodiment according to the present invention.

FIG. 4 is a cross sectional view of the oil nozzle of FIG. 3.

FIG. 5 is a perspective view of the oil nozzle of FIG. 3 mounted to the self-help oil changing apparatus of FIG. 1.

FIG. 6 is a schematic view illustrating use of the oil nozzle of FIG. 3 in an engine oil tank of a vehicle.

FIG. 7 is a view similar to FIG. 4, illustrating dirty engine oil sucking

operation for removing dirty engine oil out of the engine oil tank of the vehicle.

FIG. 8 is a view similar to FIG. 4, illustrating clean engine oil filling operation for filling clean engine oil into the engine oil tank of the vehicle.

DETAILED DESCRIPTION OF THE INVENTION

With reference to FIGS. 3 and 4, an oil nozzle 1 of an embodiment according to the present invention includes an oil sucking tube 11, an oil filling tube 12, and an extending tube unit 13. The oil sucking tube 11 and the oil filling tube 12 are coupled to the extending tube unit 13. The extending tube unit 13 includes a first tube 131 and a second tube 132. The first tube 131 intercommunicates with the oil sucking tube 11. The second tube 132 intercommunicates with the oil filling tube 12. The first tube 131 is received in the second tube 132.

More specifically, the extending tube unit 13 further includes a connecting member 133 in the form of a three-way pipe or a pipe having a plurality of openings. In this embodiment, the connecting member 133 includes a first opening 133a, a second opening 133b, and a third opening 133c, with the first, second, and third openings 133a, 133b, and 133c intercommunicating with each other. An end of the oil sucking tube 11 is

coupled to the first opening 133a. An end of the oil filling tube 12 is coupled to the second opening 133b. An end of the second tube 132 is coupled to the third opening 133c. The first tube 131 received in the second tube 132 extends through the third opening 133c to the first opening 133a to couple with the end of the oil sucking tube 11. Thus, the first tube 131 intercommunicates with the oil sucking tube 11. Furthermore, since the end of the oil filling tube 12 and the end of the second tube 132 are respectively coupled to the second opening 133b and the third opening 133c and since the second opening 133b and the third opening 133c intercommunicate with each other, the second tube 132 intercommunicates with the oil filling tube 12.

The first tube 131 has an outer diameter d. The second tube 132 has an inner diameter D. The outer diameter d of the first tube 131 is smaller than the inner diameter D of the second tube 132. Thus, the first tube 131 can extend through the second tube 132. A gap is defined between an outer periphery of the first tube 131 and an inner periphery of the second tube 132. A fluid (such as oil) is adapted to flow through the gap.

The oil nozzle 1 can further include an actuation switch 14 having an electrical connecting portion 141. The actuation switch 14 can be a switch or button of a conventional type and can be used for generating an actuating

signal. The electrical connecting portion 141 can be a conductive wire. The actuating signal can be transmitted through the electrical connecting portion 141 to the outside of the oil nozzle 1.

In use, the oil nozzle 1 of the embodiment according to the present invention can be combined with the conventional self-help oil changing apparatus 9 to replace the conventional oil nozzle 91. The oil sucking tube 11 and the oil filling tube 12 are respectively connected to the dirty oil pump 941 and the clean oil pump 942 of the oil pressure control module 94. Dirty oil to be replaced can be guided into the dirty oil tank 92, and clean oil can be filled from the clean oil tank 93 into a vehicle through the oil filling tube 12. The oil to be changed by the conventional self-help oil changing apparatus 9 can be engine oil, gear oil, or other oil. The structural arrangement of the self-help oil changing apparatus 9 can be varied according to the type of the vehicles, such as motorcycles, automobiles, or trucks. An embodiment of the self-help oil changing apparatus 9 will be described by way of example of changing engine oil of motorcycles without any restrictive intention.

With reference to FIG. 6, the second tube 132 of the extending tube unit 13 can be inserted by a user into an engine oil tank B of a vehicle. Since the first tube 131 is received in the second tube 132, the first tube 131 is also

received in the engine oil tank B when the second tube 132 has been inserted into the engine oil tank B. The electrical connecting portion 141 can be electrically connected to a control unit 95 of the self-help oil changing apparatus 9. After the user has inserted the second tube 132 into the engine oil tank B, the user can activate the actuation switch 14, which, in turn, sends an actuation signal to the control unit 95 to proceed with engine oil changing operation. Nevertheless, the actuation switch 14 can directly be mounted to the self-help oil changing apparatus 9. Thus, the oil nozzle 1 of the embodiment according to the present invention does not have to include the actuation switch 14, which can be appreciated by one skilled in the art.

With reference to FIG. 7, after the user has confirmed insertion of the second tube 132 into the engine oil tank B and has activated the actuation switch 14, the control unit 95 controls the dirty oil pump 941 to operate, creating a negative pressure in the oil sucking tube 11 and in the first tube 131 intercommunicated with the oil sucking tube 11. Thus, the dirty engine oil in the engine oil tank B is sucked through the first tube 131 and the oil sucking tube 11 into the dirty oil tank 92. On the other hand, with reference to FIG. 8, after suction of the dirty engine oil, the control unit 95 controls the clean oil pump 942 to operate, creating a negative pressure relative to the

clean oil tank 93, sucking clean engine oil to the oil filling tube 12. Since the second tube 132 intercommunicates with the oil filling tube 12, the clean engine oil can be filled into the engine oil tank B via the second tube 132, completing the self-help oil change operation.

Since the first tube 131 extends to the first opening 133a through the third opening 133c of the connecting member 133 to directly couple with the end of the oil sucking tube 11, the first tube 131 intercommunicates with the oil sucking tube 11 such that the dirty engine oil can be sucked via the first tube 131 and the oil sucking tube 11. On the other hand, the second opening 133b and the third opening 133c of the connecting member 133 intercommunicates with each other such that the second tube 132 intercommunicates with the oil filling tube 12. Furthermore, the gap between the first tube 131 and the second tube 132 permits flow of a fluid. Thus, the clean engine oil in the oil filling tube 12 can be filled into the engine oil tank B via the second tube 132. Since the end of the oil sucking tube 11 has been coupled to the first tube 131, the clean engine oil in the oil filling tube 12 passing through the second opening 133b cannot flow towards the first opening 133a into the oil sucking tube 11.

In use of the oil nozzle 1 of the embodiment according to the present

invention, by using the extending tube unit 13 including the first tube 131 intercommunicated with the oil sucking tube 11 and the second tube 132 intercommunicated with the oil filling tube 12 and receiving the first tube 131, the first tube 131 is also received in the engine oil tank B when the second tube 132 has been inserted into the engine oil tank B. In comparison with use of the conventional oil nozzle 91 in which the user must adjust the positions of the oil sucking tube 912 and the oil filling tube 913 before simultaneously inserting the ends of the oil sucking tube 912 and the oil filling tube 913 into the engine oil tank B, the first and second tubes 131 and 132 of the oil nozzle 1 of the embodiment according to the present invention are of an inner tube/outer tube arrangement in which the first tube 131 is received in the second tube 132, such that insertion of the second tube 132 assures insertion of both of the first and second tubes 131 and 132 into the engine oil tank B, increasing use convenience of the oil nozzle 1.

Furthermore, during sucking of the dirty engine oil, the position of the first tube 131 can be freely adjusted by the user to assure the end of the first tube 131 has reached the bottom of the engine oil tank B, assuring the first tube 131 can keep sucking the dirty engine oil without sucking air. The second tube 132 is fixed to the outer periphery of the first tube 131. Thus, the

second tube 132 will not move out of the engine oil tank B when the user is adjusting the position of the first tube 131. In comparison with the conventional oil nozzle 91 in which adjustment of the position of the oil sucking tube 912 tends to cause the oil filling tube 913 to move out of the engine oil tank B, the oil nozzle 1 of the embodiment according to the present invention can reliably avoid the second tube 132 from moving out of the engine oil tank B, avoiding adverse effect to the use convenience of the oil nozzle 1.

With reference to FIGS. 5 and 6, the oil sucking tube 11 and the oil filling tube 12 are preferably bendable and deformable hoses in this embodiment. Thus, a hose 15 can be mounted around the oil sucking tube 11 and the oil filling tube 12 to envelope the portions of the oil sucking tube 11 and the oil filling tube 12 outside of the self-help oil changing apparatus 9 for protection purpose. Furthermore, the first and second tubes 131 and 132 can be rigid tubes made of metal or plastic. However, the present invention is not limited to this.

Note that the lengths of the first and second tubes 131 and 132 of the extending tube unit 13 beyond the second opening 133b of the connecting member 133 can be the same or not the same, which is not restricted in the

present invention. Since the first tube 131 is used to suck dirty engine oil and since the second tube 132 is used to fill clean engine oil, the length of the first tube 131 beyond the third opening 133c is preferably larger than the length of the second tube 132 beyond the third opening 133c to assure that the end of the first tube 131 can reach the bottom of the engine oil tank B. Thus, the dirty engine oil in the engine oil tank B can effectively be sucked clean during the dirty engine oil sucking operation.

With reference to FIG. 4, the oil filling tube 12 can further include a check valve 111 that only allows flow of the fluid in a single direction. Specifically, the check valve 111 only allows the fluid to flow in a direction away from the first tube 131. With reference to FIG. 7, the dirty engine oil in the engine oil tank B can be sucked via the first tube 131 and the oil sucking tube 11. With reference to FIG. 8, after the dirty engine oil sucking operation, if there is dirty engine oil not sucked to the dirty oil tank 93 remaining in the oil sucking tube 11, the check valve 111 prevents the remaining dirty engine oil from flowing towards the first tube 131 because the check valve 111 can prevent the fluid from flowing towards the first tube 131.

With reference to FIGS. 4 and 5, in this embodiment, the oil filling tube 12 includes a switch element 121 and a stop plate 122. The switch element

121 can be an electromagnetic switch. The stop plate 122 is mounted inside the oil filling tube 12. The switch element 121 and the stop plate 122 can be operated to control opening or closing of the oil filling tube 12. Specifically, the switch element 121 includes a partitioning board 121a and a control end 121b. The control end 121b can be electrically connected to the control unit 95 of the self-help oil changing apparatus 9. The control unit 95 receives the control signal to move the partitioning board 121a towards or away from the stop plate 122 to control opening or closing of the oil filling tube 12. With reference to FIG. 7, during dirty engine oil sucking operation, the control unit 95 activates the switch element 121 to control the partitioning board 121a to abut the stop plate 122, closing the oil filling tube 12 to prevent the clean engine oil in the oil filling tube 12 from flowing into the second tube 132. With reference to FIG. 8, after the dirty engine oil sucking operation, the control unit 95 activates the switch element 121 to control the partitioning board 121a to move away from the stop plate 122. Thus, the oil filling tube 12 is opened to permit the oil filling tube 12 to fill the clean engine oil into the engine oil tank B via the second tube 132.

By providing the switch element 121 and the stop plate 122, the oil filling tube 12 can be controlled by the self-help oil changing apparatus 9 to

be opened or closed. Thus, the oil filling tube 12 can be opened only during the clean engine oil filling process, preventing the clean engine oil from entering the second tube 132 (which is a waste) during suction of the dirty engine oil or during standby time while permitting control of the total amount of the clean engine oil filled into the second tube 132. Thus, the oil nozzle 1 of the embodiment according to the present invention can avoid waste of clean engine oil and can accurately control the amount of the clean engine oil that has been filled by providing the switch element 121 and the stop plate 122.

In view of the foregoing, operation of the oil nozzle 1 of the embodiment according to the present invention is easy. The first tube 131 of the extending tube unit 13 can also be inserted into the engine oil tank B by simply extending the second tube 132 into the engine oil tank B, assuring that the first and second tubes 131 and 132 are simultaneously inserted into the engine oil tank B to reliably increase the use convenience of the oil nozzle 1.

Furthermore, since the first tube 131 is received in the second tube 132, the position of the first tube 131 can be freely adjusted by the user without the risk of movement of the second tube 132 out of the engine oil tank B. Thus, movement of the second tube 132 out of the engine oil tank B can

reliably be avoided to avoid adverse effect to the use convenience of the oil nozzle 1.

Furthermore, the oil filling tube 12 of the oil nozzle 1 of the embodiment according to the present invention further includes a switch element 121 and a stop plate 122 to control opening or closing of the oil filling tube 12, avoiding the clean engine oil from flowing into the second tube 132 during suction of the dirty engine oil or during standby time while permitting control of the total amount of the clean engine oil filled into the second tube 132, reliably avoiding waste of clean engine oil and accurately controlling the amount of the clean engine oil that has been filled.

Thus since the invention disclosed herein may be embodied in other specific forms without departing from the spirit or general characteristics thereof, some of which forms have been indicated, the embodiments described herein are to be considered in all respects illustrative and not restrictive. The scope of the invention is to be indicated by the appended claims, rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are intended to be embraced therein.

WHAT IS CLAIMED IS:

1. An oil nozzle comprising an oil sucking tube, an oil filling tube, and an extending tube unit, with the oil sucking tube and the oil filling tube coupled to the extending tube unit, with the extending tube unit including a first tube and a second tube, with the first tube intercommunicating with the oil sucking tube, with the second tube intercommunicating with the oil filling tube, and with the first tube received in the second tube.

2. The oil nozzle as claimed in claim 1, with the extending tube unit further including a connecting member having a first opening, a second opening, and a third opening, with the first, second, and third openings intercommunicating with each other, with the oil sucking tube having an end coupled to the first opening, with the oil filling tube having an end coupled to the second opening, with the second tube having an end coupled to the third opening, and with the first tube extending through the third opening to the first opening to couple with the end of the oil sucking tube.

3. The oil nozzle as claimed in claim 1, with the first tube having an outer diameter, with the second tube having an inner diameter, and with the outer diameter of the first tube smaller than the inner diameter of the second

tube.

4. The oil nozzle as claimed in claim 3, wherein the first tube and the second tube have a gap therebetween, and wherein a fluid is adapted to flow through the gap.

5. The oil nozzle as claimed in claim 1, wherein the oil sucking tube and the oil filling tube are bendable and deformable hoses, and wherein the first and second tubes are rigid tubes.

6. The oil nozzle as claimed in claim 2, wherein a length of the first tube beyond the third opening is larger than a length of the second tube beyond the third opening.

7. The oil nozzle as claimed in claim 1, with the oil filling tube including a switch element and a stop plate, with the stop plate mounted inside the oil filling tube, and with the switch element and the stop plate operable to control opening or closing of the oil filling tube.

8. The oil nozzle as claimed in claim 7, with the switch element including a partitioning board and a control end, with the control end adapted to receive a control signal, with the switch element operable to move the partitioning board towards or away from the stop plate to control opening or closing of the oil filling tube.

9. The oil nozzle as claimed in claim 1, with the oil filling tube further including a check valve, and with the check valve only allowing flow of the fluid in a direction away from the first tube.

10. The oil nozzle as claimed in claim 1, further comprising an actuation switch for generating an actuating signal, with the actuation switch including an electrical connecting portion, and with the actuating signal adapted to be transmitted through the electrical connecting portion to an outside of the oil nozzle.

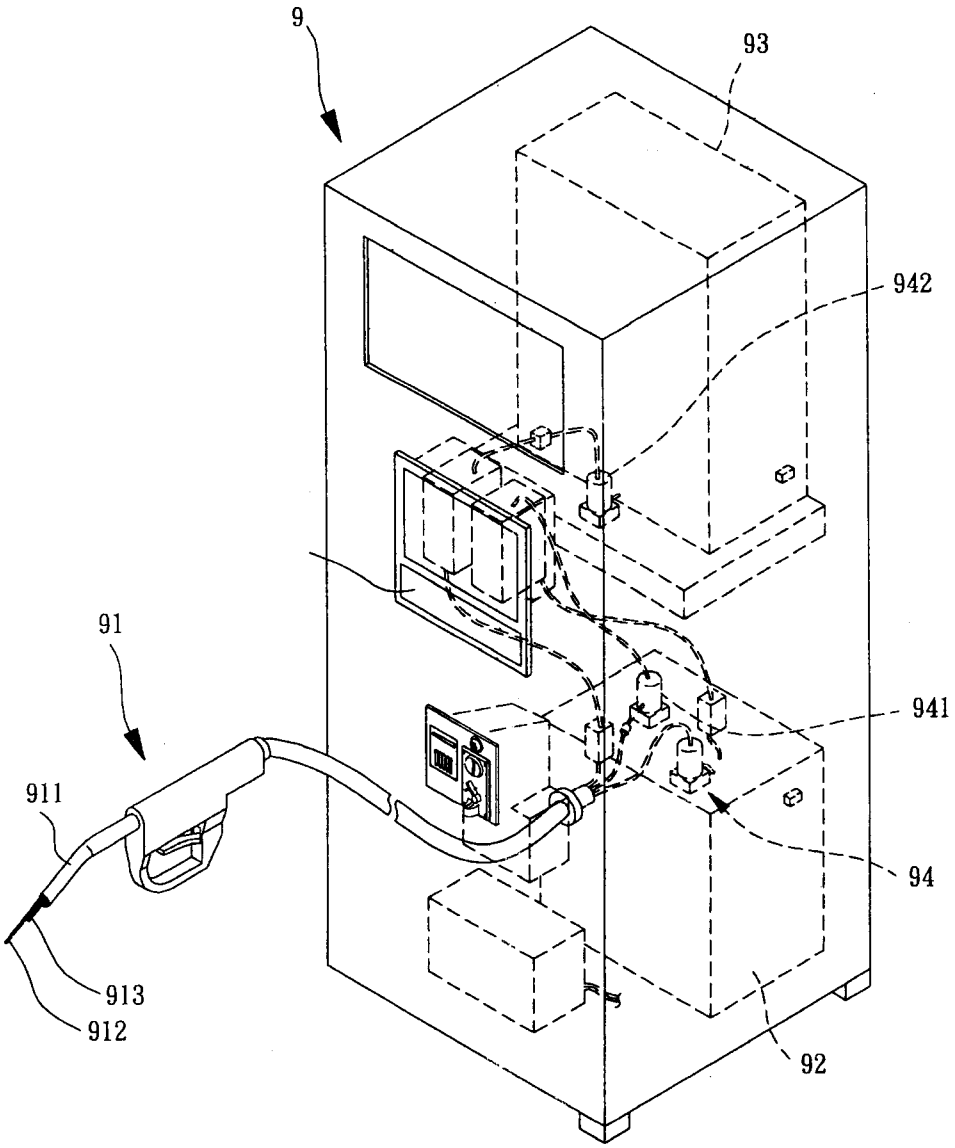

FIG. 1
PRIOR ART

EUROILTEC INDUSTRY CO., LTD.
APPLICANT
Siguion Reyna, Montecillo & Ongsiako
By:
CELSO L. CRUZ

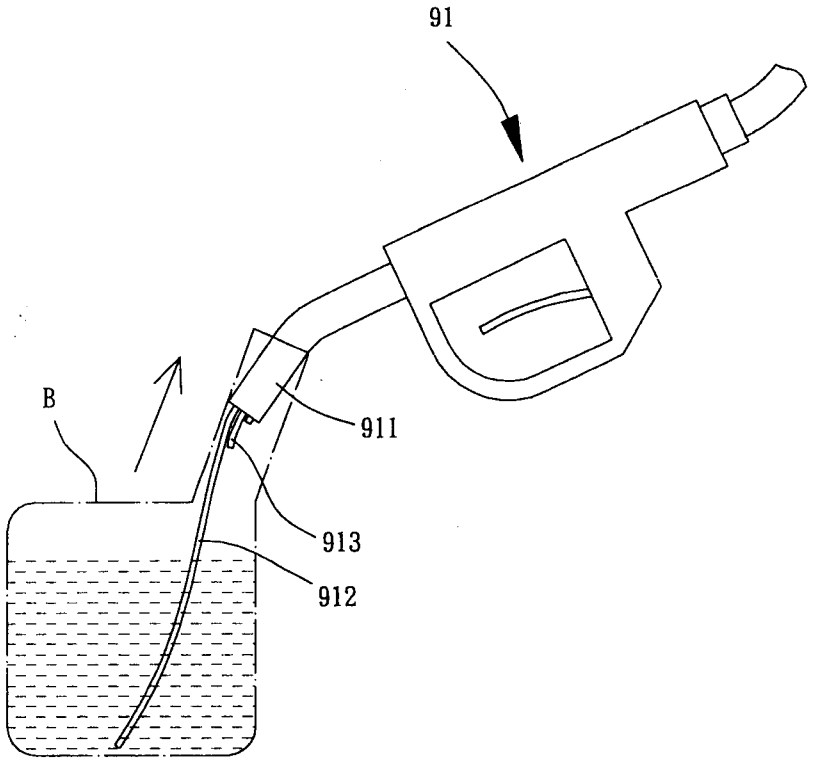

FIG. 2
PRIOR ART

EUROILTEC INDUSTRY CO., LTD.
APPLICANT
Siguion Reyna, Montecillo & Ongsiako
By:
CELSO L. CRUZ

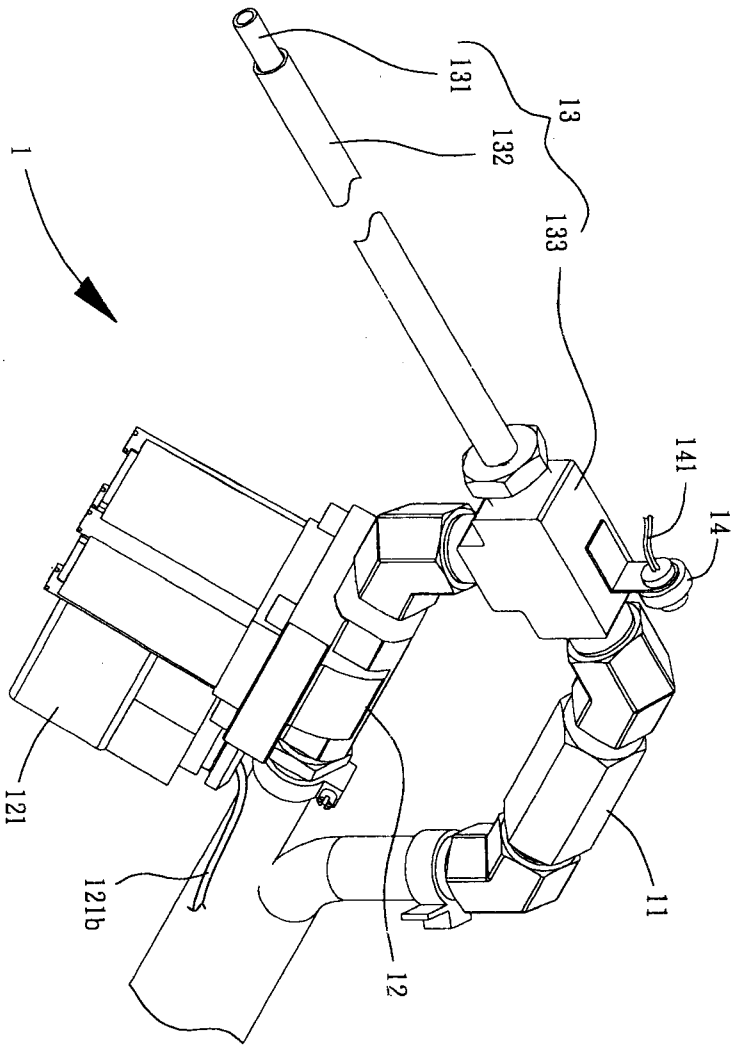

FIG. 3

EUROILTEC INDUSTRY CO., LTD.
APPLICANT
Siguion Reyna, Montecillo & Ongsiako
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CELSO L. CRUZ

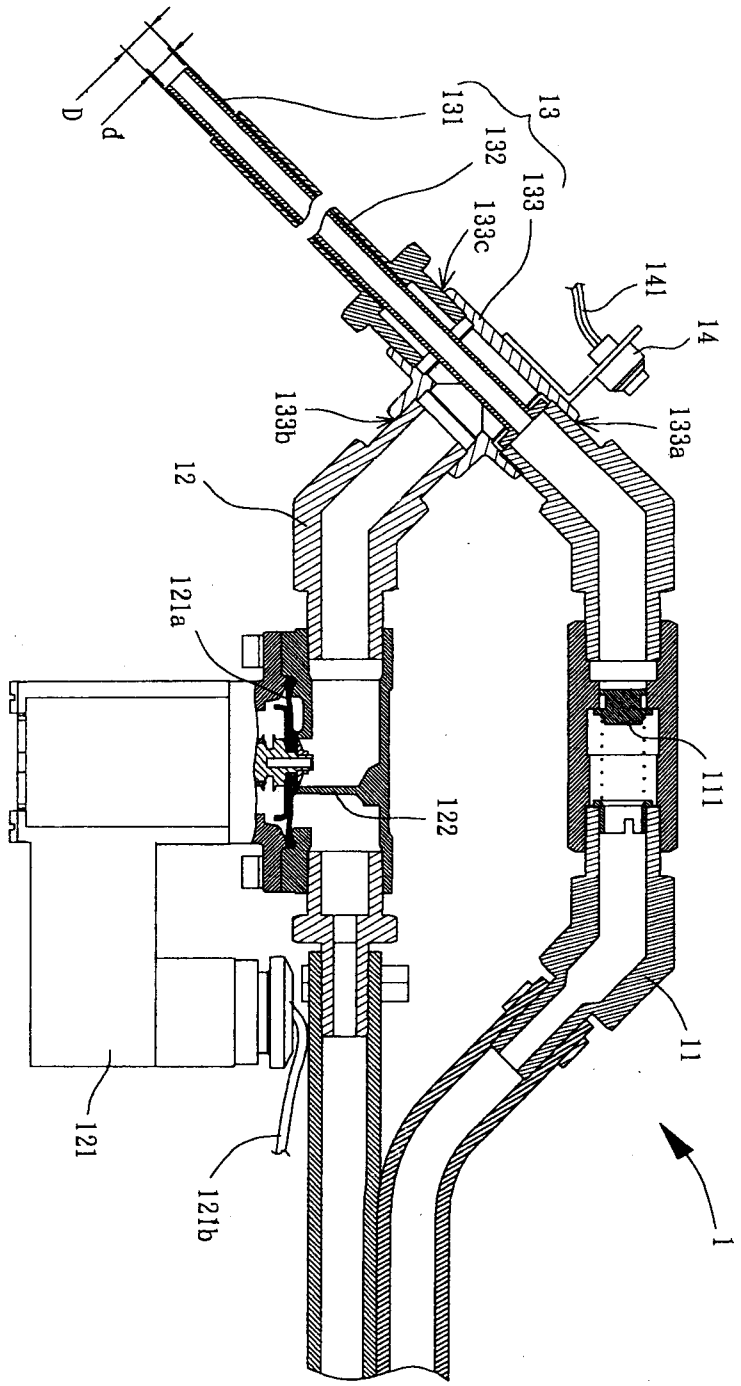

FIG. 4

EUROILTEC INDUSTRY CO., LTD.
APPLICANT
Siguion Reyna, Montecillo & Ongsiako
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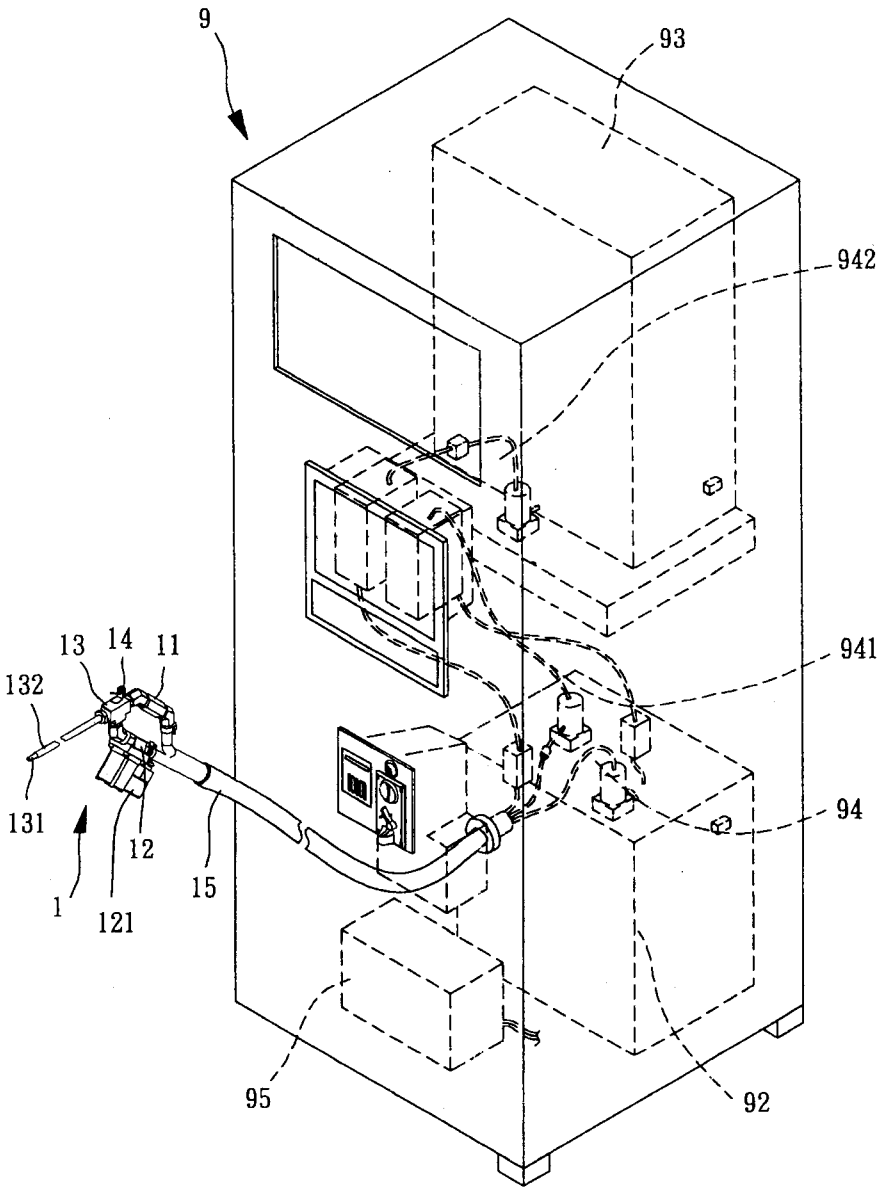

FIG. 5

EUROILTEC INDUSTRY CO., LTD.
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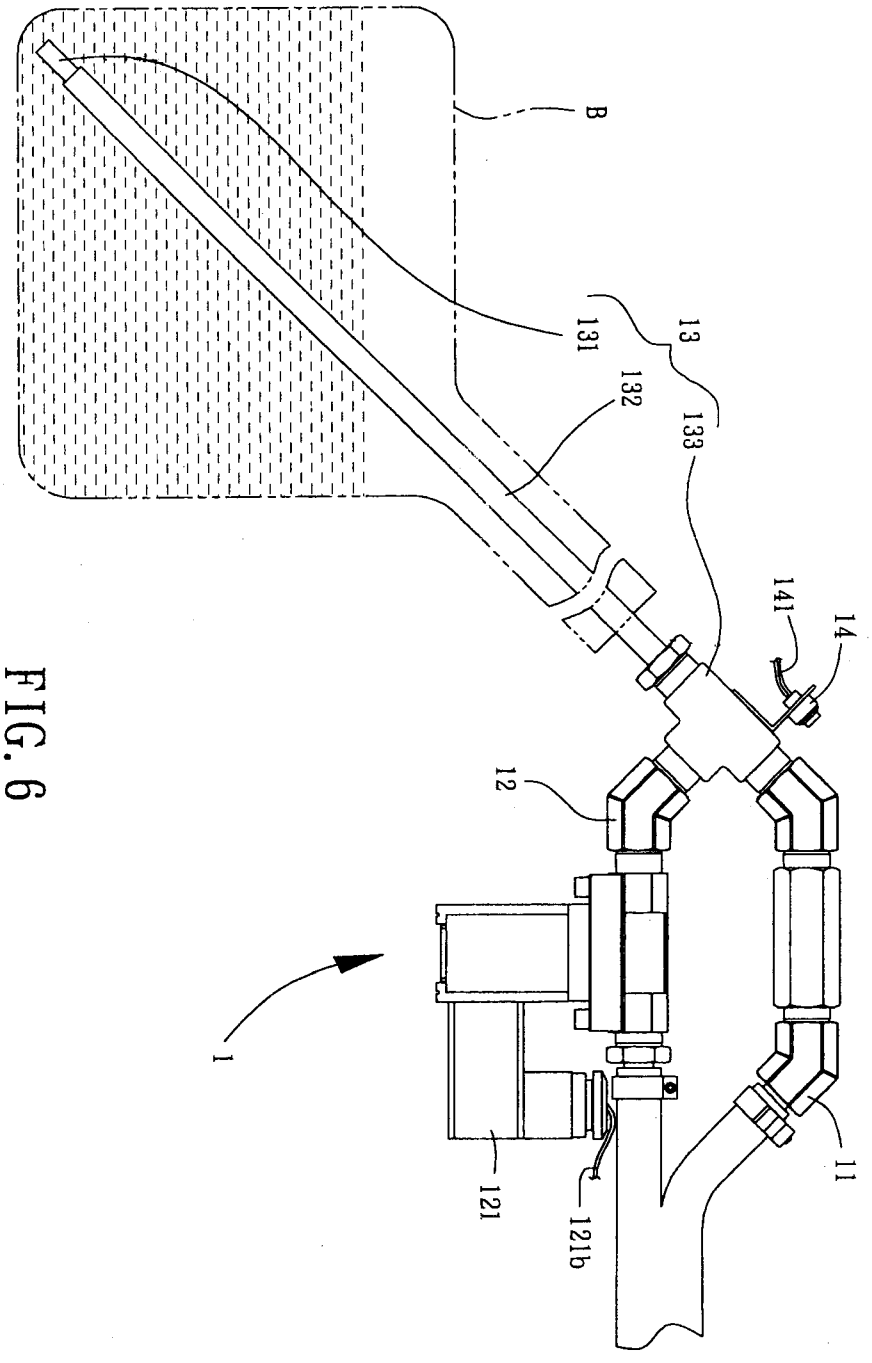

FIG. 6

EUROILTEC INDUSTRY CO., LTD.
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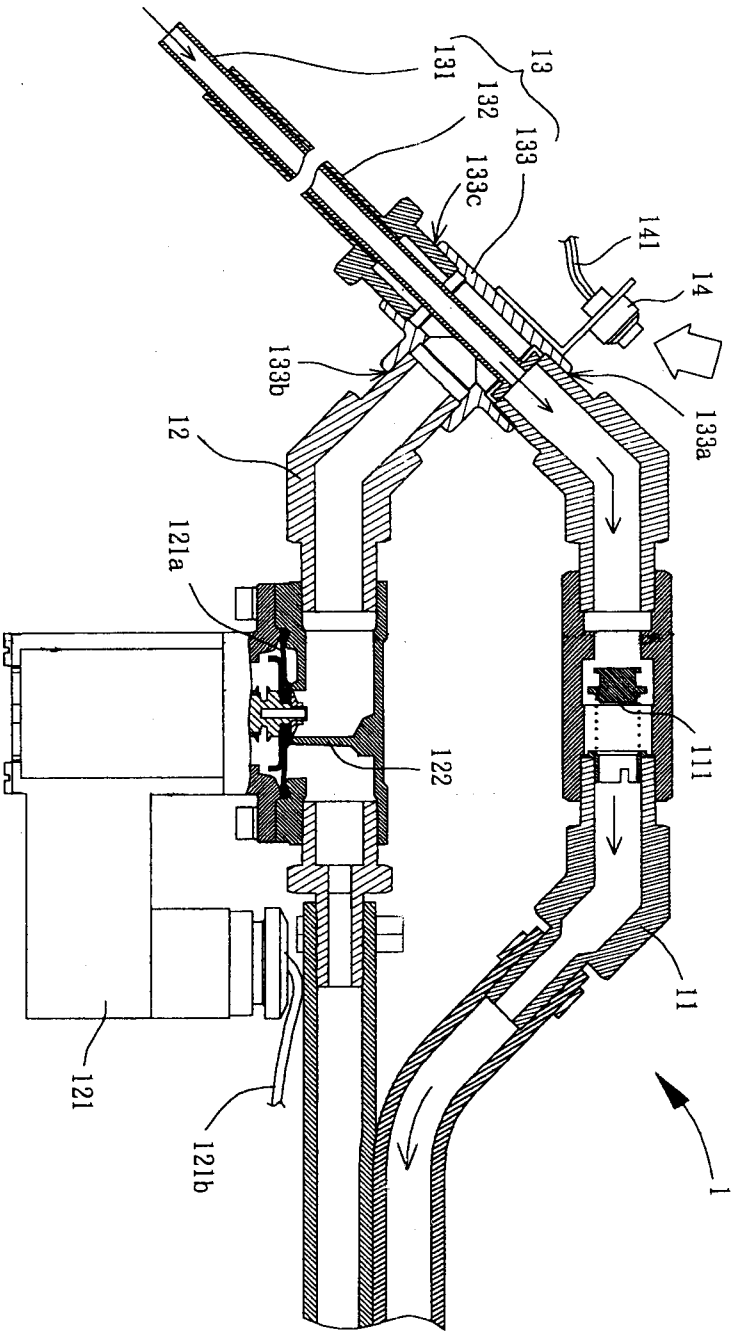

FIG. 7

EUROILTEC INDUSTRY CO., LTD.
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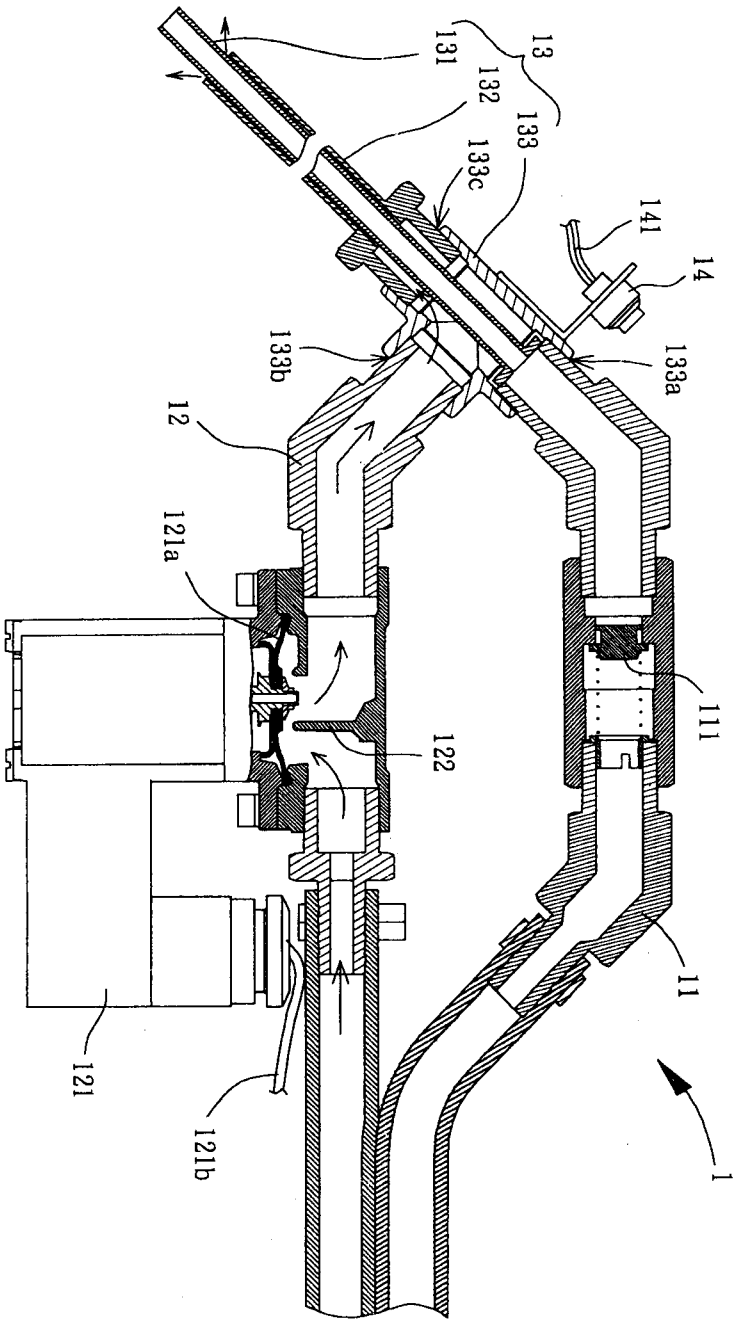

FIG. 8

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