protruding end of the air introduction tube 31e that protrudes to the inside of the attachment recess 31d. Thus, when the tank body 30 is attached and fixed to the attachment lid 31a, the check valve member 33a of the air intake tube 33 is arranged near the inner side of the bottom section of the tank body 30. Thanks to the provision of the air intake tube 33, when the tank body 30 attached and fixed to the attachment lid 31a is inverted, it is possible to send-in replacement air to the inner side of the tank body 30's bottom section--which is now located at the uppermost section--through the check valve member 33a arranged near the bottom section's inner side via the air introduction tube 31e and the air intake tube 33. Thus, the liquid agent can be smoothly sent out to the flexible tube 14 while being replaced with air inside the tank body 30.

[0030]

Also, in this way, there is no need to provide a hole for air replacement in the bottom section of the tank body 30, thus making it possible to effectively prevent the liquid agent contained in the bottle from leaking from the air-replacement hole. Moreover, there is no need for a step of opening a hole in the bottom section of the tank body 30, and the tank body 30 can be detached easily even if there is some liquid agent remaining therein.

[0031]

Herein, as for the check valve member 33a, it is possible to use any one of the various types of known check valves having the function of allowing the inflow of air from the air intake tube 33 into the tank body 30 but blocking the inflow of liquid agent from the tank body 30 to the air intake tube 33. In the present embodiment, it is possible to preferably use an elastomeric check valve that has, for example, a cylindrical shape with both side surfaces cut off diagonally, and in which two valve plates are arranged so as to overlap one another at the tip end section, as illustrated in Fig. 5(b), and the valve plates open and close at substantially the central section of the tip end. More specifically, a valve with the product name "duckbill check valve" (product from Vernay (U.S.)) may preferably be used.

[0032]

Further, in the present embodiment, a tube coupling section 31f that is in

communication with the attachment recess 31b is provided in the substantially hemispherical attachment lid 31a of the turning section 31d, as illustrated in Fig. 5(a). By connecting the upper end section of the flexible tube 14 to the attachment lid 31a via the tube coupling section 31f, the flexible tube 14 is brought into communication with the attachment recess 31d of the attachment lid 31a and the inside of the tank body 30 whose mouth/neck section 30a is attached to the attachment recess 31d. Thus, the liquid agent contained in the tank can be sent out smoothly from the inverted tank body 30 toward the liquid-amount adjusting section 15 and the cleaning head section 11 via the flexible tube 14 while sending-in air for replacement to the inside of the tank body 30 via the air intake tube 33. The flexible tube 14 connected to the tube coupling section 31f is inserted into the hollow inner section of the handle section 12 through a tube insertion hole 12a via the inside of the handle fixing section 31c, and extends toward the open/close adjustment unit 29.

[0033]

As illustrated in Figs. 4(a) to 4(c), the tank inverted-state supporting section 32 includes: a handle fixing section 32a; and a projecting holding section 32c that is provided so as to project sideward from the handle fixing section 32a and that includes a pair of leaf-spring-shaped elastic pieces 32b curved in an arc shape. At the time of attaching the mouth/neck section 30a to the attachment lid 31a of the tank attaching-turning section 31 and then turning the turning section 31d upward, for example by 180 degrees, and inverting the tank body 30, the pair of leaf-spring-shaped elastic pieces 32b are elastically deformed so as to widen the space therebetween, and the cylindrical barrel part of the tank body 30 is fitted into the projecting holding section 32c by being sandwiched between the elastic pieces. In this way, the tank body 30 can be held easily in a stable, inverted state. Further, for example, by turning the tank body 30 downward and widening the space between the pair of leaf-spring-shaped elastic pieces 32b, the tank body 30 can easily be released from its fitted state in the projecting holding section 32c.

[0034]

In the present embodiment, as illustrated in Figs. 3(a) and 3(b), the open/close adjustment unit 29 attached to the handle section 12 and arranged below the liquid-agent-containing tank section 13 is a thick-plate-shaped unit member that has a

protruding end of the air introduction tube 31e that protrudes to the inside of the attachment recess 31b. Thus, when the tank body 30 is attached and fixed to the attachment lid 31a, the check valve member 33a of the air intake tube 33 is arranged near the inner side of the bottom section of the tank body 30. Thanks to the provision of the air intake tube 33, when the tank body 30 attached and fixed to the attachment lid 31a is inverted, it is possible to send-in replacement air to the inner side of the tank body 30's bottom section--which is now located at the uppermost section--through the check valve member 33a arranged near the bottom section's inner side via the air introduction tube 31e and the air intake tube 33. Thus, the liquid agent can be smoothly sent out to the flexible tube 14 while being replaced with air inside the tank body 30.

[0030]

Also, in this way, there is no need to provide a hole for air replacement in the bottom section of the tank body 30, thus making it possible to effectively prevent the liquid agent contained in the bottle from leaking from the air-replacement hole. Moreover, there is no need for a step of opening a hole in the bottom section of the tank body 30, and the tank body 30 can be detached easily even if there is some liquid agent remaining therein.

[0031]

Herein, as for the check valve member 33a, it is possible to use any one of the various types of known check valves having the function of allowing the inflow of air from the air intake tube 33 into the tank body 30 but blocking the inflow of liquid agent from the tank body 30 to the air intake tube 33. In the present embodiment, it is possible to preferably use an elastomeric check valve that has, for example, a cylindrical shape with both side surfaces cut off diagonally, and in which two valve plates are arranged so as to overlap one another at the tip end section, as illustrated in Fig. 5(b), and the valve plates open and close at substantially the central section of the tip end. More specifically, a valve with the product name "duckbill check valve" (product from Vernay (U.S.)) may preferably be used.

[0032]

Further, in the present embodiment, a tube coupling section 31f that is in

communication with the attachment recess 31b is provided in the substantially hemispherical attachment lid 31a of the turning section 31d, as illustrated in Fig. 5(a). By connecting the upper end section of the flexible tube 14 to the attachment lid 31a via the tube coupling section 31f, the flexible tube 14 is brought into communication with the attachment recess 31b of the attachment lid 31a and the inside of the tank body 30 whose mouth/neck section 30a is attached to the attachment recess 31b. Thus, the liquid agent contained in the tank can be sent out smoothly from the inverted tank body 30 toward the liquid-amount adjusting section 15 and the cleaning head section 11 via the flexible tube 14 while sending-in air for replacement to the inside of the tank body 30 via the air intake tube 33. The flexible tube 14 connected to the tube coupling section 31f is inserted into the hollow inner section of the handle section 12 through a tube insertion hole 12a via the inside of the handle fixing section 31c, and extends toward the open/close adjustment unit 29.

[0033]

As illustrated in Figs. 4(a) to 4(c), the tank inverted-state supporting section 32 includes: a handle fixing section 32a; and a projecting holding section 32c that is provided so as to project sideward from the handle fixing section 32a and that includes a pair of leaf-spring-shaped elastic pieces 32b curved in an arc shape. At the time of attaching the mouth/neck section 30a to the attachment lid 31a of the tank attaching-turning section 31 and then turning the turning section 31d upward, for example by 180 degrees, and inverting the tank body 30, the pair of leaf-spring-shaped elastic pieces 32b are elastically deformed so as to widen the space therebetween, and the cylindrical barrel part of the tank body 30 is fitted into the projecting holding section 32c by being sandwiched between the elastic pieces. In this way, the tank body 30 can be held easily in a stable, inverted state. Further, for example, by turning the tank body 30 downward and widening the space between the pair of leaf-spring-shaped elastic pieces 32b, the tank body 30 can easily be released from its fitted state in the projecting holding section 32c.

[0034]

In the present embodiment, as illustrated in Figs. 3(a) and 3(b), the open/close adjustment unit 29 attached to the handle section 12 and arranged below the liquid-agent-containing tank section 13 is a thick-plate-shaped unit member that has a