United States Patent

[11] 3,565,133

[72] Inventor **Wilfred Jones**
Riddlesden, England

[21] Appl. No. **783,949**
[22] Filed **Dec. 16, 1968**
[45] Patented **Feb. 23, 1971**

[73] Assignee **Cyprane Limited**
Keighley, England

[32] Priority **Jan. 5, 1968**
[33] **Great Britain**
[31] **823/68**

[54] **VOLATILE ANAESTHETIC VAPORISING APPARATUS**
4 Claims, 3 Drawing Figs.

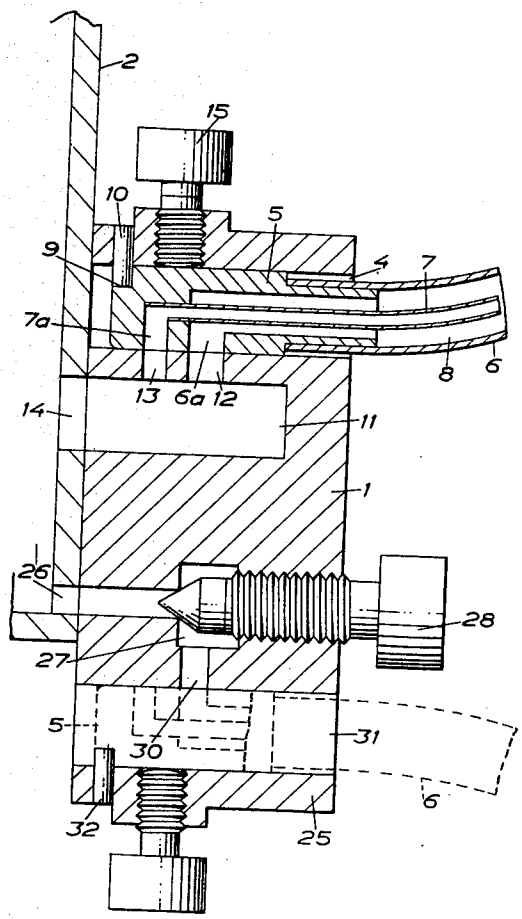
[52] **U.S. Cl.** **141/308,** 141/302, 141/309
[51] **Int. Cl.** **B65b 3/06,** B65b 3/18
[50] **Field of Search** ..... 141/285, 301, 308 (Earles), 309, 302

[56] **References Cited**
UNITED STATES PATENTS

1,712,470	5/1929	Pray	141/309
2,914,097	11/1959	Battinich	141/308X
3,139,123	6/1964	Lisciani	141/309X
3,142,320	7/1964	Olson	141/309
3,459,245	8/1969	Schreiber et al.	141/292

Primary Examiner—Mark M. Newman
Attorney—Busser, Smith & Harding

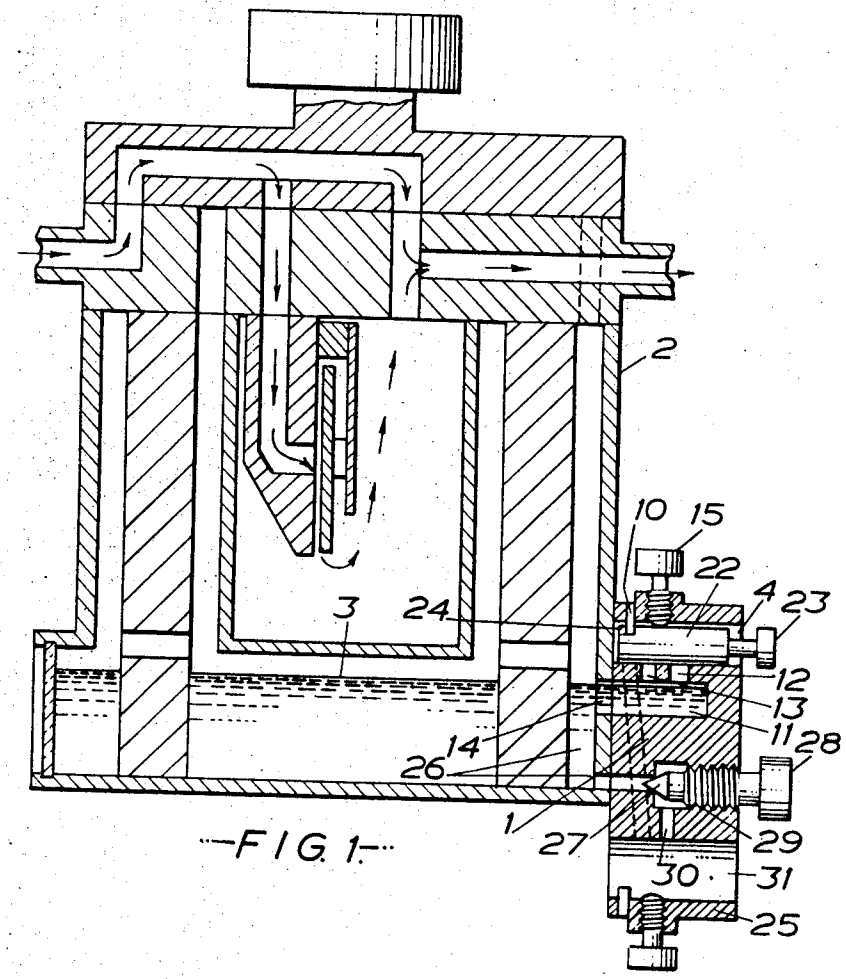
ABSTRACT: A filling system and means for preventing the introduction of an incorrect liquid into the body of volatile anaesthetic vaporising apparatus and having complementary interengaging male and female parts of which one is on the said body and the other is on the end of a flexible liquid feed conduit attached to a filler bottle. The conduit is an air tube within a liquid passage forming tube and the said body part provides a valve controlled outlet.



PATENTED FEB 23 1971

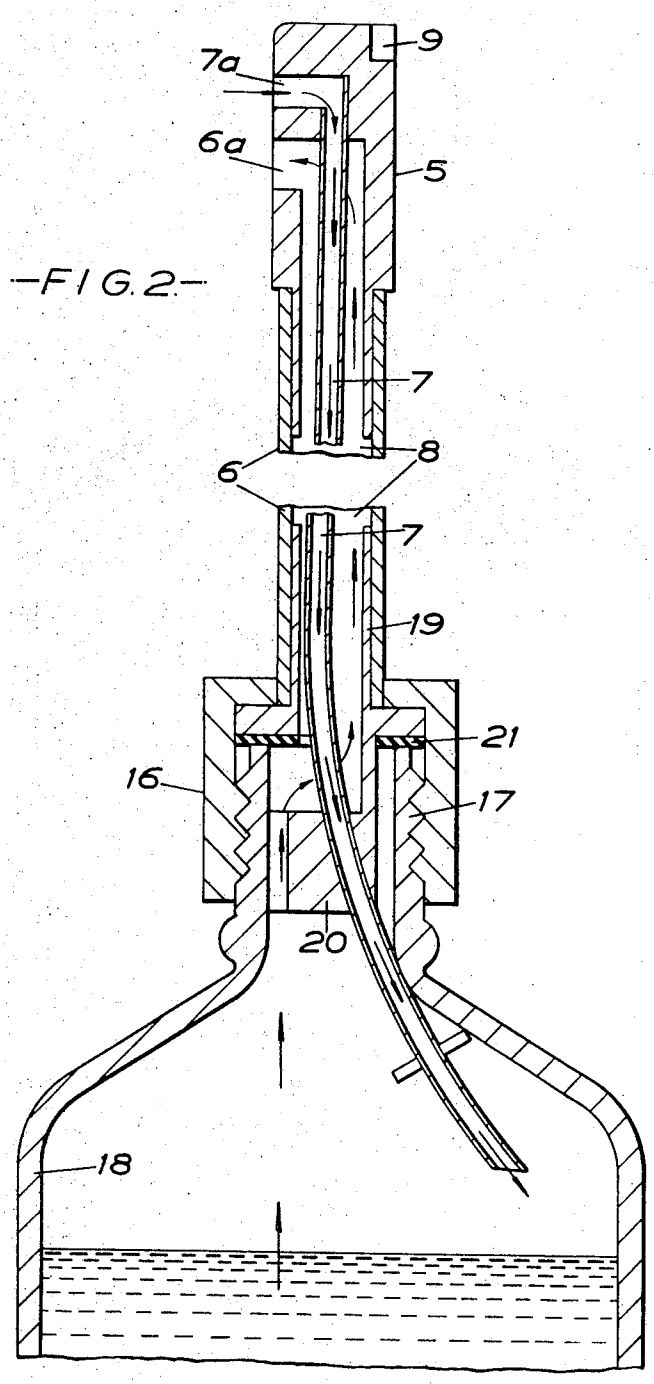
3,565,133

SHEET 1 OF 3



—FIG. 1—

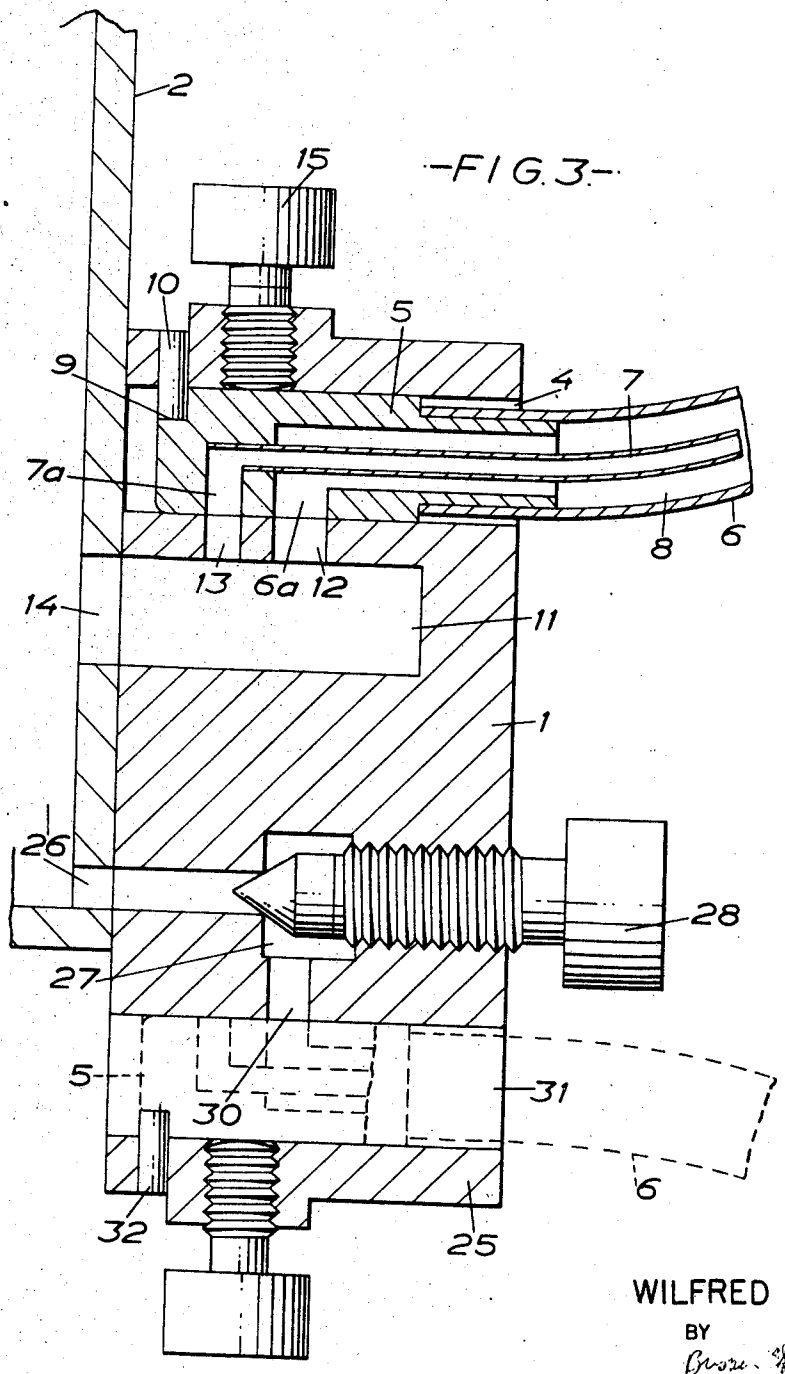
INVENTOR:
WILFRED JONES
BY



—FIG. 2—

INVENTOR:
WILFRED JONES
BY

-FIG. 3-



INVENTOR:
WILFRED JONES
BY
Brose, Howell & Hall

VOLATILE ANAESTHETIC VAPORISING APPARATUS

This invention relates to apparatus capable of mixing the vapor of a volatile liquid anesthetic with a gaseous fluid, such as air, oxygen, or nitrous oxide, or a combination thereof, all of which for convenience are hereinafter included in the term "gas."

It is considered that the apparatus should be used only for one type of volatile anesthetic although it is known for the apparatus to be used for different types with a cleaning operation between the changes.

In view of the above this invention is concerned with ensuring that only a given type of liquid anesthetic can be poured into the apparatus from a supply container which is usually a glass bottle, and it is the main object of this invention to provide a safety-type filling system and means for this purpose.

Accordingly there is provided a filling system for volatile liquid anesthetic apparatus, including an inlet device on the wall of the liquid receiving body of the apparatus, an inlet opening in said device, a separate conduit having at one end an outlet member to enter said opening and at its other end a cap connection to be secured onto the neck of a bottle, air and liquid passages through the conduit and its ends to facilitate the flow of liquid from the bottle into said body, said conduit outlet member and its receiving inlet opening in said device being complementary in a manner that ensures only the correct type of member can be fully inserted and thus a correct type of liquid introduced into the apparatus.

The invention includes an inlet device forming part of the wall of the aforesaid body, said device including means for retaining the aforesaid outlet member of the conduit and means for closing the opening when the member is withdrawn. The said device may incorporate a drainage control valve and outlet passage. Said outlet passage may terminate in an outlet opening adapted to receive the aforesaid conduit outlet member for draining liquid from the body into a bottle.

The conduit outlet member may have an outlet hole and an inlet hole for separating the air and liquid passages. Moreover, said member may have a slot to collaborate with a location peg in the inlet opening to receive the member.

The invention will now be more particularly described with reference to the accompanying drawings, in which:

FIG. 1 is a sectional elevation of the liquid anesthetic filling device on a vaporizer;

FIG. 2 is a sectional elevation of the conduit and bottle for connection to the filling device; and

FIG. 3 is a sectional elevation of the filling device and conduit in engagement.

In the illustrated embodiment of this invention a filler block 1 is secured to the sidewall of the body 2 of liquid anesthetic apparatus to provide means for the introduction of liquid anesthetic 3. This block incorporates an inlet opening 4 of cross-sectional shape (it may be rectangular or other shape) which is complementary to an outlet member 5 on the end of a flexible conduit 6 which incorporates air and liquid flow passages 7 and 8 leading respectively to and from openings 6*a* and 7*a* in the member. The arrangement is such that only an outlet member 5 of the correct shape and size or other formation, can enter fully into the opening 4. Conveniently, the member 5 has a slot 9 to register with a location peg 10 which projects into the opening 4 at a predetermined point. A liquid feed-air outlet passageway 11 leads from feed and air holes 12 and 13 leading from the said opening 4 to communicate with an opening 14 in the wall of the body of the apparatus for introducing liquid thereinto. To hold an outlet member 5 in position in the opening 4, a locking screw 15 is provided in the head of the block 1, and such head may be a separable part of the block. The other end of the conduit 6 is in the form of an internally screw-threaded cap 16 to be screwed on to the neck 17 of a known form of liquid containing bottle 18. The arrangement is preferably such that there is no need to redesign the formation of the bottle neck 17 but the cap can be arranged to fit only the neck of a bottle containing a given drug. In one known convenient form the bottle is closed by a

removable rubber or other flexible seal or disc normally enclosed by a screw-on cover cap. Such cap and disc can readily be removed for the location of the conduit cap 16 incorporating a flanged conduit connection element 19 which has a part 20 for locating the air tube 7. A sealing washer 21 is located between the element flange and the neck 17 to provide a liquid- and airtight seal. The conduit outlet member 5 can be pushed into the aforesaid inlet opening 4, secured by the screw 15 and the bottle inverted for liquid to flow therefrom into the body 2 to a given level. During the filling operation air flows out through the passageway 11, the hole 13, opening 7*a* and passage 7 into the bottle 18. The conduit is removed and a closure plug 22 (or other means) with a gripping knob 23 used to close the inlet opening 4. This plug has a slot 24 to register with the pin 10 and it closes the two holes 12 and 13.

The aforesaid supply block 1 includes a liquid drainage section 25. For example, a cranked (or other) drainage passage 26 leads from the bottom of the feed passageway 11 and into a small valve chamber 27 controlled by a valve 28 in a screw-threaded bore 29. A further passage 30 leads from the chamber to a drainage outlet opening 31. The latter may be a single opening for the outflow of liquid when the valve 28 is released (screwed back) but such outlet opening is preferably of the same formation as the aforesaid inlet opening 4 with a location peg 32 so that the conduit member 5 can be inserted thereinto for draining liquid back into a bottle 18 through the same (or another) conduit 6. This lower section 25 of the block 1 may be a detachable part from the main block. Moreover, if so desired, this outlet section may be constructed so that it is optional whether drainage is out through a conduit or through another direct drainage opening normally closed by a closure plug or cap.

It will be understood that the use of a flexible conduit allows the bottle to be held, inverted for supply and upright for drainage, at different levels to control the rate of flow of the liquid anesthetic.

I claim:

1. Apparatus for introducing liquid anesthetic into a liquid receiving body of anesthetic apparatus, comprising a unit mounted at a selected height on a sidewall of said body, a connection passageway allowing flow of liquid from said unit to said body and flow of air from said body to said unit, an inlet opening in said unit above said connection passageway, said inlet opening being of a selected shape and size, separate air and liquid passages between said connection passageway and the lower side of said inlet opening, a separable connection member complementary to said inlet opening, interference means for ensuring that only a connection member of predetermined form can enter said inlet opening, means securing said connection member in said inlet opening, a flexible conduit carrying said connection member at a first end thereof, said conduit comprising an air flow passage and a liquid flow passage, said connection member when secured in said inlet opening connecting said air and liquid flow passages of said conduit respectively with said air and liquid passages between said connection passageway and said inlet opening, a screw-on cap at a second end of said flexible conduit for attachment to a liquid containing bottle having a predetermined form of screw-threaded neck, outlet means from said body, an outlet opening in said outlet means, said outlet opening being complementary to said inlet opening and having interference means for ensuring that only said connection member of said predetermined form can enter said outlet opening, and a valve for controlling liquid flow through said outlet means.

2. Apparatus in accordance with claim 1 wherein said means securing said connection member in said inlet opening is a screw screwable into engagement with said connection member.

3. Apparatus in accordance with claim 1 wherein said conduit comprises a flexible outer tube constituting said liquid flow passage and a flexible inner tube lying within said outer tube and constituting said air flow passage, and retaining means are included in said screw-on cap for retaining the end of said inner tube at an angle to the axis of said screw-on cap.

4. Apparatus for introducing liquid anesthetic into a liquid-receiving body of anesthetic apparatus, comprising a unit mounted at a selected height on a sidewall of said body, a first connection passageway allowing flow of liquid from said unit to said body and flow of air from said body to said unit, an inlet opening in said unit above said first connection passageway, said inlet opening being of a selected shape and size, separate air and liquid passages between said first connection passageway and the lower side of said inlet opening, a separable connection member complementary to said inlet opening, interference means for ensuring that only a connection member of predetermined form can enter said inlet opening, means securing said connection member in said inlet opening, a flexible conduit carrying said connection member at a first end thereof, said conduit comprising an air flow passage and a liquid flow passage, said connection member when secured in said inlet opening connecting said air and liquid flow passages of said conduit respectively with said air and liquid passages between said first connection passageway and said inlet opening, a screw-on cap at a second end of said flexible conduit for attachment to a liquid containing bottle having a predetermined form of screw-threaded neck, a second connection passageway below said first connection passageway allowing flow of liquid from the body to the unit, an outlet opening in said unit located below said second connection passageway, said outlet opening communicating with said second connection passageway, said outlet opening being complementary to said inlet opening and having interference means for ensuring that only said connection member of said predetermined form can enter said outlet opening to connect said second connection passageway to said liquid flow passage in said conduit to drain liquid from said body, and a valve in said unit to control liquid flow through said second connection passageway.