United States Patent

[11] 3,578,042

[72] Inventor Hans Georg Breiling
Lubeck, Germany

[21] Appl. No. 786,621
[22] Filed Dec. 24, 1968
[45] Patented May 11, 1971

[73] Assignee Dragerwerke, Heinr. & Bernh. Drager
Lubeck, Germany

[32] Priority Jan. 2, 1968
[33] Germany
[31] P 16 16 191.4

[54] **VAPORIZER FOR ANESTHETIC**
5 Claims, 3 Drawing Figs.

[52] U.S. Cl. 141/301
[51] Int. Cl. B65b 1/04
[50] Field of Search 141/311, 285, 301

[56] References Cited
UNITED STATES PATENTS

987,518	3/1911	Wendling	141/301X
2,130,059	9/1938	Bosh et al.	141/301X

Primary Examiner—Robert M. Walker
Attorney—Curtis, Morris and Safford

ABSTRACT: Narcosis apparatus comprising a vaporizer equipped with a filler assembly consisting essentially of a horizontal member and a member rotatable thereon to a filling position and is provided with bore holes that align themselves only when in filling position, the exterior opening of the bore holes when aligned being at the same level as the preselected maximum liquid level within the vaporizer so that the latter will automatically be prevented from overfilling.

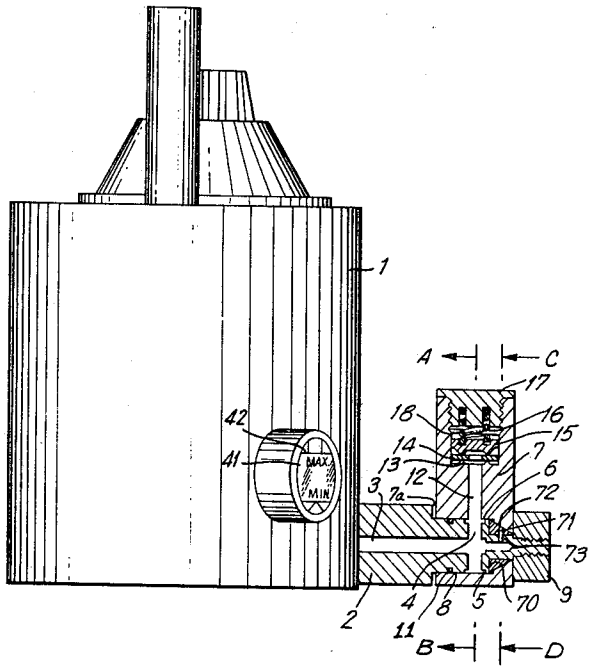


FIG. 1

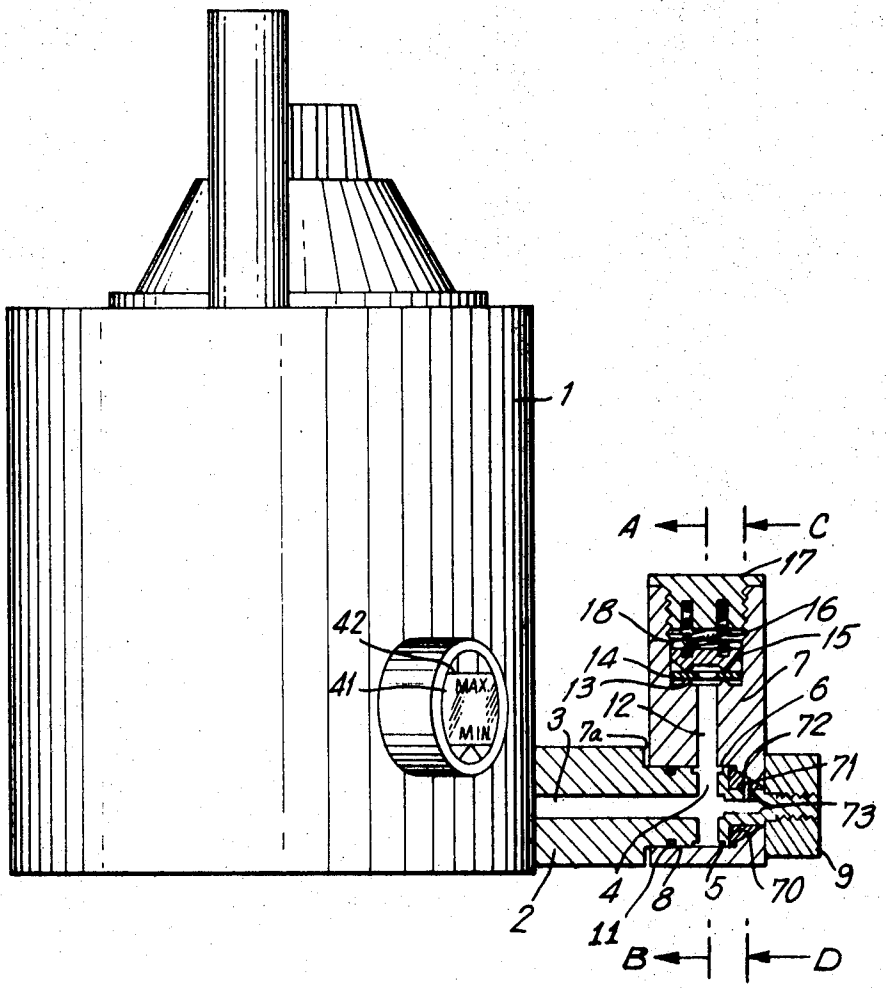


FIG. 2

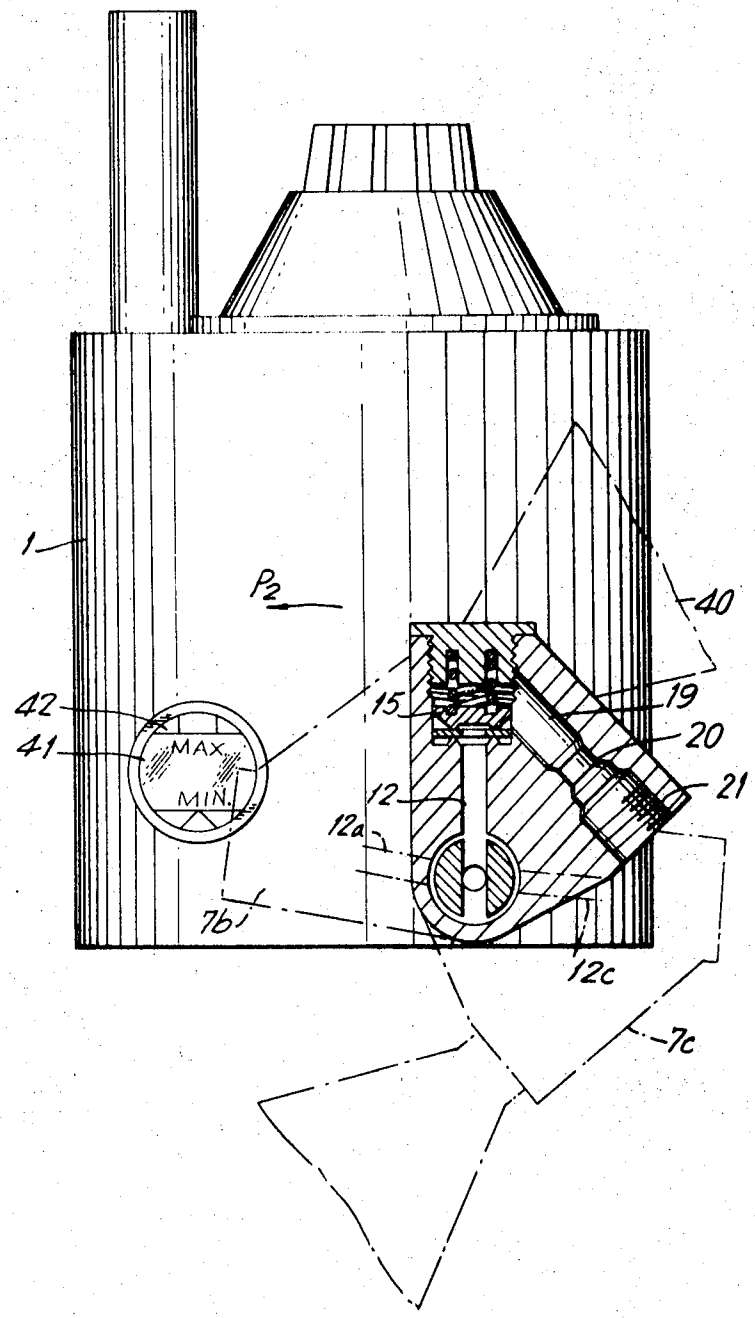
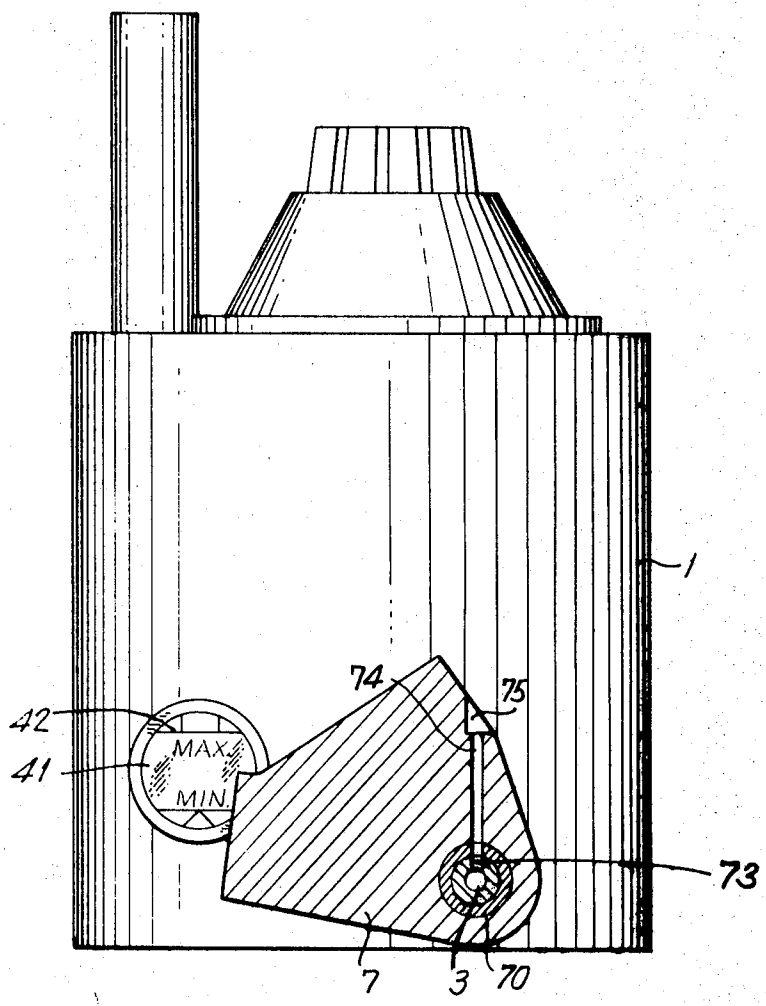


FIG. 3



VAPORIZER FOR ANESTHETIC

This invention relates to an improved overflow construction in vaporizers for anesthetics such as that described in copending application Ser. No. 761,089 filed Sept. 20, 1968.

The improvement of this invention is applicable particularly to vaporizers equipped with a filler assembly communicating with the interior of the vaporizer at a level below the preselected maximum liquid level and preferably at the low point in the vaporizer so that the filler assembly can also be utilized to drain the vaporizer, the assembly consisting essentially of a substantially horizontal member having a longitudinal conduit communicating with a transverse conduit in a rotatably member adapted to be connected to a source of anesthetic for filling the vaporizer.

Generally, the vaporizer to which the improved overflow construction of this invention is most readily adaptable is one provided with a filler assembly comprising a substantially horizontal filler connection having a longitudinal conduit and an intersecting transverse conduit near the outer end, and a second filler connection mounted for rotation on the outer end of the horizontal filler connection, the rotatable connection having a second transverse conduit communicating with the intersecting transverse conduit to provide uninterrupted communication from a source of anesthetic, through the mouth and length of the conduits in the rotatable and horizontal connections, and into the vaporizer. In a preferred embodiment of the vaporizer to which the overflow construction is most advantageously applied, the horizontal filler connection leads directly to the low point in the vaporizer so that the filler assembly can also be used to drain the vaporizer.

The overflow construction of this invention has the advantage of automatically being open only when the filler assembly is in filling position. The construction is such that the mouth of the overflow is at the same elevation as the preselected maximum liquid level within the vaporizer when the filler assembly is in filling position. This has the significant advantage of providing for an overflow of liquid anesthetic when the preselected maximum liquid level is exceeded, thus making impossible an inadvertent or careless filling of the vaporizer to above the desired maximum liquid level. Another feature of the present invention is the provision of conical mating bearing surfaces for sealing the juncture between the horizontal and rotatable filler connections against leakage of fluid.

These and other features, details of construction and advantages will become apparent from the following description and the accompanying drawing in which:

FIG. 1 is a side view of a vaporizer provided with a filler assembly shown in section;

FIG. 2 is a side view in cross section taken along section line A–B of FIG. 1; and

FIG. 3 is a side view in cross section taken along section line C–D of FIG. 1 but with the apparatus in filling position.

The vaporizer 1 as shown in the drawing is equipped with a filling assembly comprising a horizontal filler connection 2 having a longitudinal conduit or bore 3 intersecting a transverse and substantially perpendicular conduit or bore 4. In a preferred embodiment, the conduit 3 is directly in line with the low point (not shown) of the vaporizing chamber so that the filling assembly can also be used to drain or empty the vaporizer.

The transverse conduit 4, as shown, terminates in an annular groove 5 in the horizontal filler connection 2. The horizontal filler connection 2 is further provided with an annular recess 6 to accommodate, for pivotal rotation about the longitudinal axis of connection 2, a rotatable filler connection 7 having a mating bore 8 and retained on the outer end of filler connection 2 by means of a screw cap 9.

The rotatable filler connection 7 is further provided with a sealing ring 11 to avoid leakage between members 2 and 7, and a second transverse conduit or bore 12 terminating in a spring-loaded valve assembly including a valve seat 13, washer 14, plug 15, spring 16 and screw cap 17 forming a space 18 communicating with a filler conduit 19, 20 and threads 21 for receiving a cylinder shown in phantom at 40 in FIG. 2 and described more fully in copending application Ser. No. 761,089. The filling positions of rotatable filler-connection 7 and conduit 12 are shown in phantom at 7*b* and 12*a*, respectively, and their drainage positions are shown in phantom at 7*c* and 12*c*, respectively.

Referring now to FIG. 1 and to FIG. 3, the latter showing the rotatable filler connection 7 in filling position 7*b*, the outer end of the horizontal filler connection 2 has a shoulder 70 carrying a ring 71 having a conical profile and bearing surface 72 keyed or otherwise affixed to the connection 2 to avoid rotation. There is a radial bore 73 from conduit 3 through ring 71 to the effective upper surface of member 7, said bore 73 communicating with bore 74 in filler connection 7 only when the latter is in filling position 7*b*, as shown in FIG. 3. The bore 74 terminates in a mouth 75 which is open to the exterior at a level substantially the same as the preselected maximum liquid level shown at 42 in the gauge or inspection window 41.

In operation, the vaporizer is filled by screwing a flask or other container 40 of liquid anesthetic into the threaded portion 21, rotating the flask and rotatable connection 7 as a unit to the filling position shown in FIG. 3 and with phantom lines in FIG. 2. When sufficient liquid has passed through conduit 12, annular groove 5 and conduits 4 and 3 to fill the vaporizer to the preselected maximum level 42, liquid will overflow through bores 73, 74 if the filling is not halted, thus automatically preventing overfilling. As soon as the rotatable connection 7 is rotated to another position, such as that shown in FIGS. 1 and 2, the bore 73 is sealed because of nonalignment thereof with bore 74.

When the vaporizer 1 is drained, e.g., by rotating the rotatable connection to the position 7*c* shown in FIG. 2, the bore 73 remains sealed, thus avoiding spillage of anesthetic.

I claim:

1. In a vaporizer for an anesthetic comprising a vessel having a vaporizing chamber having a low point for containing and vaporizing a liquid anesthetic and an assembly of filler connections for filling said chamber with said liquid anesthetic to a preselected maximum level, said assembly comprising (A) a substantially horizontal filler connection having inner and outer ends, a first, longitudinal conduit closed at the outer end and communicating at the inner end with the interior of the chamber at a point below said preselected maximum level, and a transverse conduit intersecting the longitudinal conduit inwardly of the outer end; and (B) a second filler connection mounted for rotation on the outer end of the horizontal filler connection to a filling position, said second connection having a second conduit communicating at one end, when it is in filling position, with the transverse conduit and at the other end with means for receiving liquid anesthetic from a container therefor, the improvement which comprises a radial bore from the longitudinal conduit to the upper surface of the horizontal filler connection and a second bore in the rotatable connection adapted to communicate at one end with the upper end of the first bore only when the second filler connection is in filling position.

2. A vaporizer as defined in claim 1 wherein a conical bearing surface is provided at the outer end of the horizontal filler connection and the rotatable filler connection has a mating bearing surface for sealing the assembly of filler connections against leakage.

3. A vaporizer as defined in claim 2 wherein at least one of said bearing surfaces is a ring member having a conical profile.

4. A vaporizer as defined in claim 1 wherein the horizontal filler connection is directly in line with the low point of the vaporizing chamber.

5. A vaporizer as defined in claim 1 wherein an annular groove is provided in the horizontal filler connection for communication between the second and transverse conduits in all positions of the rotatable filler connection.