

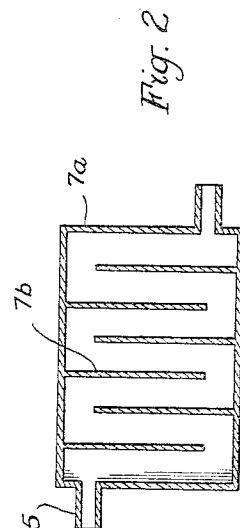
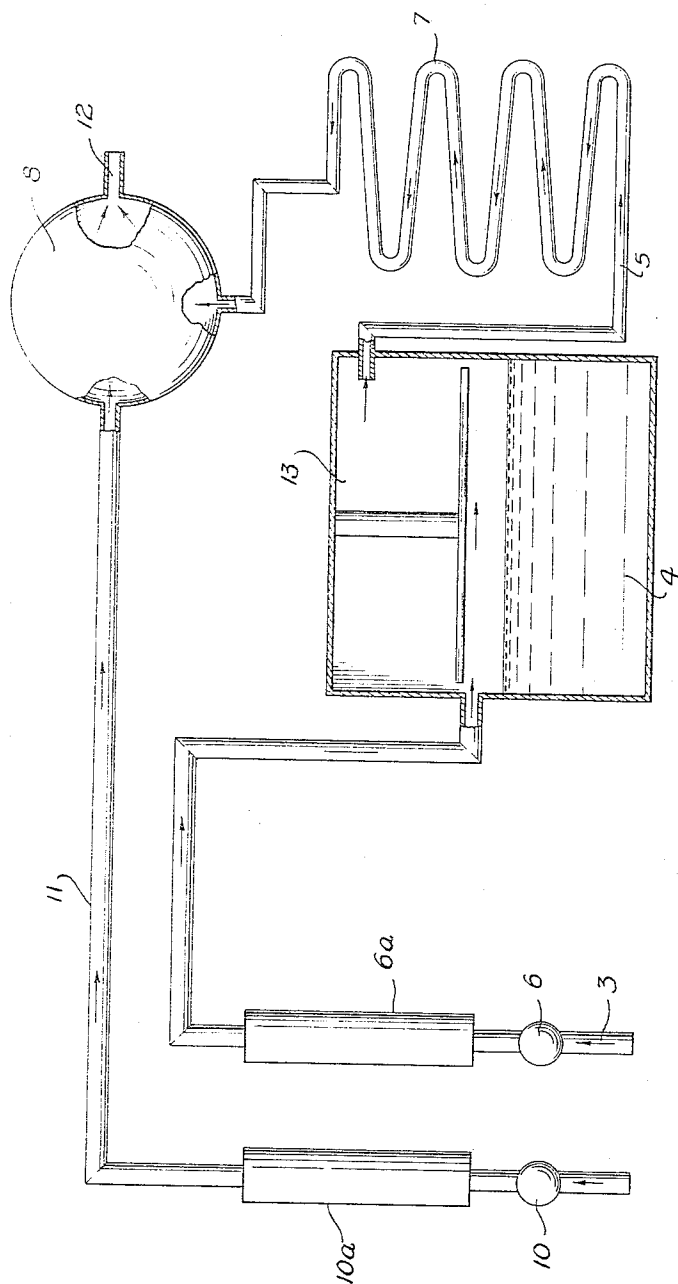
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3,313,298

## ANESTHESIA VAPORIZER

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## ANESTHESIA VAPORIZER

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2 Claims. (Cl. 128—188)

This invention relates to an anesthesia vaporizer and, in particular, to an anesthesia vaporizer which uses an anesthetic that is liquid at normal temperatures.

In my copending application Ser. No. 226,864, filed Sept. 28, 1962, now Patent No. 3,158,154, an anesthesia vaporizer is disclosed in which an elongated tube is included in the feed line to the vaporizer unit, which tube has such a length that a backflow of gas through the vaporizer unit cannot reach a distributing chamber which is connected to a mixing chamber by means of a bypass line. Such a tube is in the form of a coil.

This invention is directed to a modified form of the apparatus described in my aforesaid application. In this invention, the elongated pipe or pipe coil is inserted in the gas discharge line from the vaporizer unit, which line leads to a gas mixing chamber. It has been found that this arrangement will produce the same advantages as obtained by the apparatus of my aforesaid application.

The means by which the objects of the invention are obtained are described more fully with reference to the accompanying diagrammatic drawings in which:

FIGURE 1 is a cross-sectional view through the apparatus; and

FIGURE 2 is a cross-sectional view of a modified form of a portion of FIGURE 1.

As shown in FIGURE 1, gas, such as air, an air mixture, a nutritive gas mixture with or without the addition of cyclopropane, laughing gas or the like, flows through the inlet feed line 3 into the liquid vaporizer unit 4. The gas mixed with the vaporized anesthetic leaves vaporizer unit 4 through outlet pipe 5. Inlet feed line 3 is provided with a control valve 6 and a metering device 6a by means of which halothane can be mixed with the gas. In outlet pipe 5, a relatively long piece of pipe in the form of a pipe coil 7 is inserted, and the outlet to this pipe coil is joined to the mixing chamber 8. Inlet feed line 3 is a first pipe means for leading the gas to the vaporizer unit 4 and pipe 5 with coil 7 is a second pipe means for leading gas from a vaporizer unit 4 to the mixing chamber 8. A third pipe means feeds air with or without admixed gas through valve 10 and metering devices 10a into line 11 which extends into mixing chamber 8. An outlet tube 12 leads from the mixing chamber to the patient.

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In operation, the apparatus without pipe coil 7 receives pressure differences in vaporizer unit 4 to the same extent that occur in line 12 and mixing chamber 8 because of the breathing of the patient. These pressure differences in vaporizer chamber 13 can cause a backflow of the gas from chamber 8 to chamber 13 which is uncontrollable and results in that the gases in chamber 13 become mixed with more than the wanted amount of vaporized anesthetic, and these overmixed gases will then pass in uncontrollable amounts through mixing chamber 8 to the patient. An overdose of anesthetic gas is thus given the patient. By including the pipe coil 7 in the line between the vaporizer unit 4 and the mixing chamber 8, the gas from the mixing chamber 8 cannot backflow into the vaporizing chamber 13 during the maximum pressure differences occurring due to the breathing of the patient.

In FIGURE 2, the coil 7 of FIGURE 1 can be replaced by a container 7a having interior baffles 7b which form an elongated passageway for the gas.

Having now described the means by which the objects of the invention are obtained, I claim:

1. In a vaporizer for an anesthetic liquid at normal temperatures, as used in an anesthesia apparatus, said vaporizer having a mixing chamber, a vaporizer unit, first pipe means for leading intake gas from a gas supply into said unit, second pipe means for leading vaporized gas from said unit into said mixing chamber, outlet tube means for exhausting gas from said mixing chamber, and third pipe means joined to said mixing chamber for leading intake gas directly from a gas supply into said mixing chamber, the improvement in which said second pipe means has a very long length relative to the distance traversed by the gas during normal gas backflow from said mixing chamber due to pressure pulsations caused by the breathing of the user of the vaporizer.

2. In a vaporizer as in claim 1, said second pipe means comprising a container, and baffle means in said container for forming an elongated gas passageway in said container.

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