

[54] BREATHING CIRCUIT

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[51] Int. Cl.A61m 17/00

[58] **Field of Search**.....128/147, 188, 145.8, 145 A,
128/208, 201, 195, 205; 285/272, 273, 278

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[57] **ABSTRACT**

There is disclosed a breathing circuit which includes a swivelled fitting for connection to a patient's face mask or endotracheal tube and for connecting thereto breathing hoses which are to be connected to an anesthetic machine or to a pulmonary ventilator. The fitting is characterized in that the hoses are laterally disposed with respect to the patient's nose. The circuit in its entirety is further characterized in that it is light in weight, is translucent and is designed for one-patient use to render it disposable.

5 Claims, 5 Drawing Figures

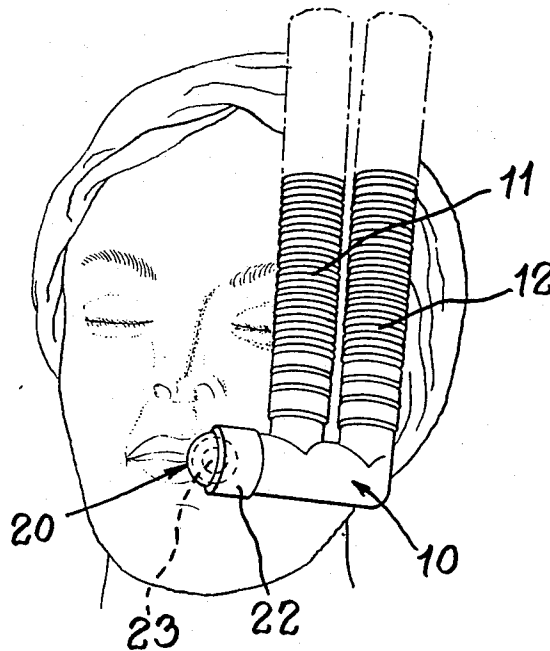


Fig. 2.

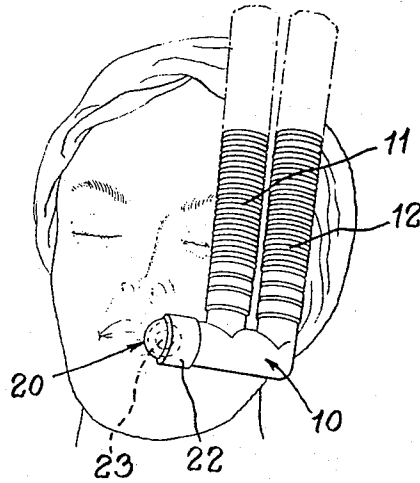


Fig. 1.

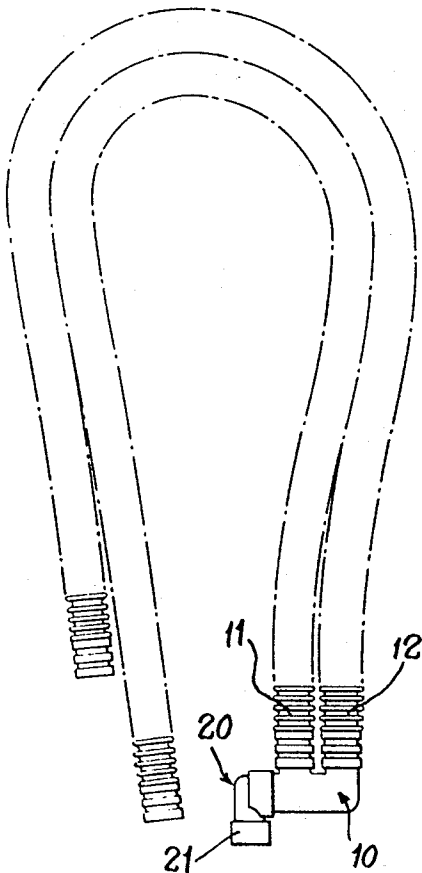


Fig. 3.

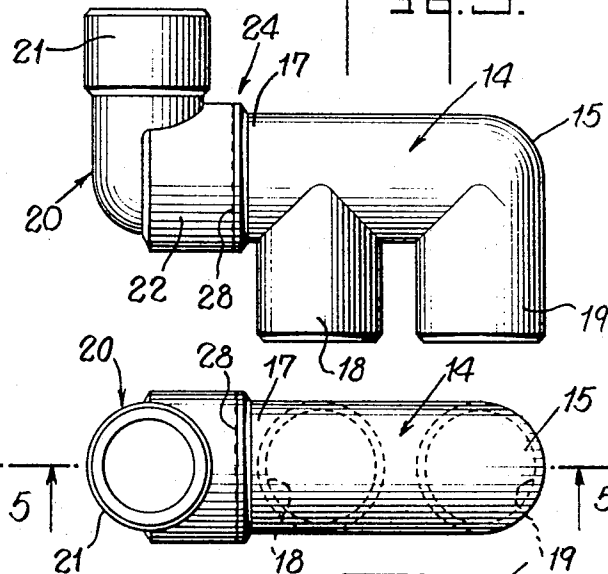


Fig. 4.

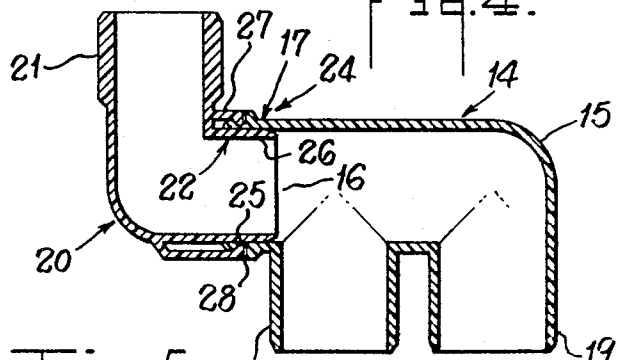


Fig. 5.

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BREATHING CIRCUIT

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to surgery and, more particularly, to apparatus for use in connection with inhalation anesthesiology and ventilation therapy.

Heretofore, breathing apparatus for use in connection with inhalation anesthesiology and ventilation therapy were reused over and over after sterilization thereof. Recently, it has been established that in spite of sterilization the breathing apparatus caused cross-infection due to contamination by gram-negative organisms. Numerous attempts have been made to improve sterilization techniques but without avail because of the inherent condition of the atmosphere in hospitals and the like.

SUMMARY OF INVENTION

Accordingly, an object of the present invention is to provide a breathing circuit of the foregoing described type which is so economical that it is disposable.

Another object is to provide such a breathing circuit which is extremely light in weight and is constructed so that it is more comfortable to the patient.

Another object is to eliminate weight drag on tracheostomy tubes.

Another object is to minimize the dangers of kinking or accidental extubation of endotracheal tubes.

A further object is to provide such a breathing circuit which is constructed of plastic resin and is fabricated under high temperature conditions.

A still further object is to provide such a breathing circuit which is translucent, thus allowing direct observation of excess or purulent secretions and also of condensate level.

Other and further objects will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the present invention, the foregoing objects are generally accomplished by providing a breathing circuit which comprises a substantially right angle tubular elbow having a first arm for connection to a patient's pulmonary system and having a second arm, a hollow body member having a pair of side by side ports and having an end opening, a flexible hose connected to each of the ports, and swivel means connecting the second arm of the elbow to the end opening of the body member so that the hoses are laterally disposed with respect to the patient's nose.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a plan view of the breathing circuit in accordance with the present invention.

FIG. 2 is a perspective view illustrating the breathing circuit applied to a patient.

FIG. 3 is an elevational view of a swiveled fitting.

FIG. 4 is a plan view of the fitting shown in FIG. 3.

FIG. 5 is a sectional view taken along the line 5—5 on FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing in detail, a breathing circuit is shown in FIG. 1 which generally comprises a swiveled fitting 10, and a pair of corrugated flexible hoses 11 and 12, each hose having one end connected to the fitting 10 with the other end to be connected to an anesthetic machine or to a pulmonary ventilator.

The fitting and the hoses are constructed of a translucent inert plastic resin preferably of polypropylene and

polyethylene, respectively. These parts by being translucent allow direct observation of excess or purulent secretions and also of condensate level. When the breathing circuit is used in connection with ventilation therapy equipment, the plastic is non-conductive and, therefore, translucent. When the circuit is used in connection with inhalational anesthetic agents, the plastic is conductive of a black color, in which translucency is lost. Preferably the conductive plastic material comprises a carbonized plastic resin which is electrically conductive, being of low and high density polyethylene. However, in cases where there is positive assurance that a flammable agent will not be used, the non-conductive circuit may be used in connection with inhalational anesthesia.

The parts are fabricated at such high temperatures that following manufacture they are sterile. During packaging they never become wet and hence any contaminant growth is inhibited. Random sampling of the packaged product has shown 100 percent sterility, that is, negative for bacteria and fungi. However, even if there were occasional contamination this would not be serious because the greatest problem in ventilatory therapy is cross-infection with hospital acquired organisms. Since the breathing circuit in accordance with the present invention is relative inexpensive, it is discarded after one-patient use and thus contributes enormously to eradication of pulmonary cross-infection.

The fitting 10 (shown in FIGS. 3 to 5) comprises a hollow body member 14 having a closed end 15 and an opening 16 defined by a cylindrical section 17 at its opposite end and having side by side tubular sections 18 and 19 extending outwardly to provide ports for connecting the hoses 11 and 12; a tubular substantially right angle elbow 20 having an arm 21 serving as a port for connection to a patient's endotracheal tube 23 or face mask (not shown) or tracheostomy tube (not shown), that is the patient's pulmonary system, and having an arm 22; and swivel means 24 for connecting the arm 22 to the cylindrical section 17 of the body member 14.

The swivel means 24 includes an annular recess 25 on the outer surface of the cylindrical section 17, and spaced apart inner and outer coaxial circular wall sections 26 and 27, respectively, on the arm 22 for receiving the section 17. The outer wall 27 has annular bead means 28 on its peripheral edge extending into the recess 25, functioning as a ratchet. The swivel means in this manner is constructed and arranged to enable the body member 14 to be turned 360° with respect to the elbow 20 at desired fixed positions.

In FIG. 2 the breathing circuit is shown as applied to a patient with the arm 21 of the elbow 22 connected to an endotracheal tube 23 in situ. It will be observed, that by reason of the manner in which the fitting 10 is constructed, the hose 11 and 12 are laterally disposed with respect to the patient's nose. This, coupled with the extreme light weight of the circuit, about 120 grams, reduces worry about accidental extubation and relieves pressure on the nose and eyes, thereby avoiding such damage as corneal abrasions.

SUMMATION

From the foregoing description it will be seen that the present invention provides a highly improved and practical breathing circuit both for inhalational anesthesia and ventilation.

What is claimed is:

1. An inert plastic resinous fitting for use in a breathing circuit comprising a hollow substantially tubular body member having an open cylindrical end and a closed end opposite said open end, said member having first and second ports for connection of a hose thereto and having an end opening in fluid flow communication with said ports, said first mentioned opening being in a cylindrical section of said body member, said ports being defined by substantially parallel and side by side tubular sections extending substantially normally outwardly from said body member, a tubular member being a substantially right angle elbow and having a port at said one

end for connection to a patient's face mask or endotracheal tube and having an opening at its other end in fluid flow communication with said first mentioned opening, swivel means for connecting said members at said openings said swivel means including an annular recess in the outer surface of said cylindrical section, and spaced apart inner and outer coaxial circular wall sections at the opening of said elbows for receiving said cylindrical section of said body member, said outer wall having annular spaced apart bead means on its peripheral edge extending into said recess so as to function as a ratchet, and said swivel means being constructed and arranged to enable said body member to be turned 360° with respect to said

elbow.

2. A fitting according to claim 1, constructed of a translucent inert plastic resin.

3. A breathing circuit comprising the fitting of claim 1, a flexible hose connected to each of said ports.

4. A breathing circuit according to claim 3, wherein said elbow, said body member and said hoses are constructed of a translucent inert plastic resin.

5. A breathing circuit according to claim 3, wherein said elbow, said body member and said hoses are constructed of a carbonized plastic resin which is electrically conductive.

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