(12) UK Patent Application (19) GB (11) 2 303 306 (13) A

(43) Date of A Publication 19.02.1997

(21) Application No 9614672.5

(22) Date of Filing 12.07.1996

(30) Priority Data
(31) 955840 (32) 13.07.1995 (33) ZA

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(51) INT CL[6]
A61M 16/00

(52) UK CL (Edition O)
A5R RGEX
A5T TAC

(56) Documents Cited
EP 0442008 A1 WO 95/06492 A1 US 5318017 A
US 5165396 A US 4559940 A US 4270531 A

(58) Field of Search
UK CL (Edition O) A5R REG RGEX , A5T TAC
INT CL[6] A61M 16/00
ONLINE: EDOC, WPI, CLAIMS, JAPIO

(54) Oral airway tube

(57) The airway tube comprises a tube body 12 for entry into a patient's mouth, having an anterior portion 14.1 and an anatomically curved posterior portion 14.2 leading therefrom. A tubular bite portion 16 of a relatively stiff material is disposed inside the anterior portion, and has a connector, preferably a universal anaesthetic connector (ISO) 18, connected thereto. A flange 22 limits the depth of insertion of the device into the patients' mouth. Preferably the tube 12 is of translucent material and the bite portion is coloured. The device enables mouth-to-mouth resuscitation without mouth-to-mouth contact.

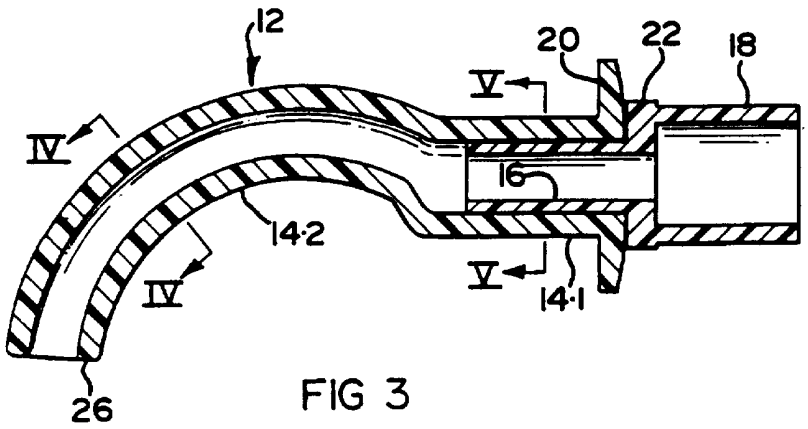

FIG 3

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

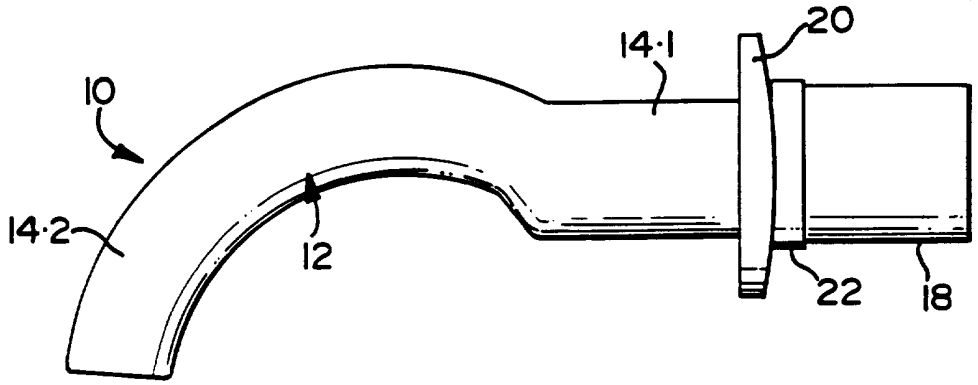

FIG 1

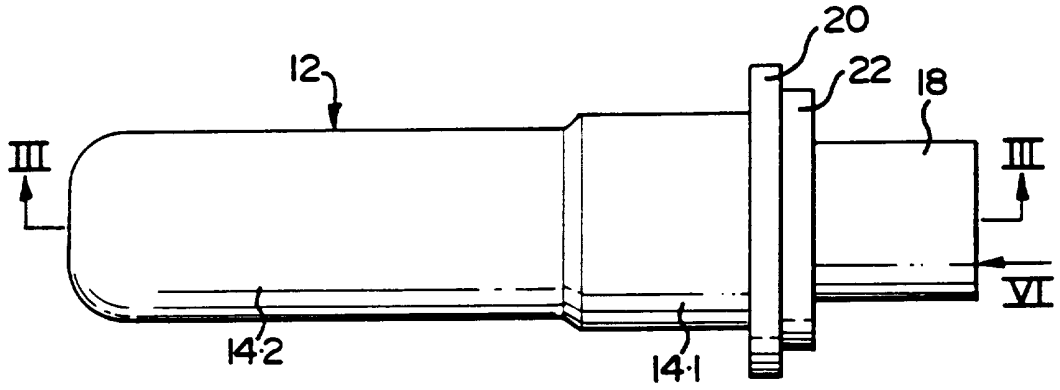

FIG 2

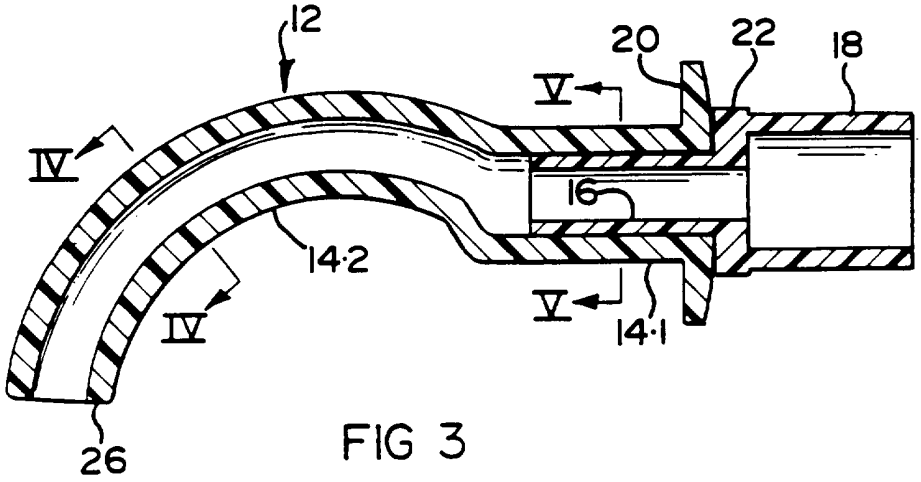

FIG 3

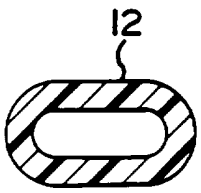

FIG 4

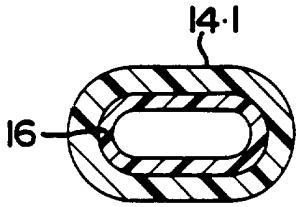

FIG 5

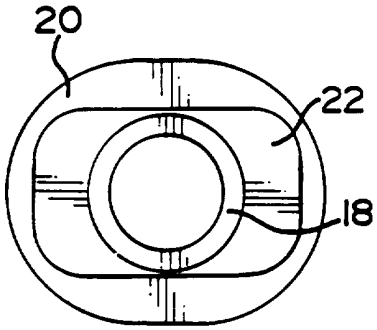

FIG 6

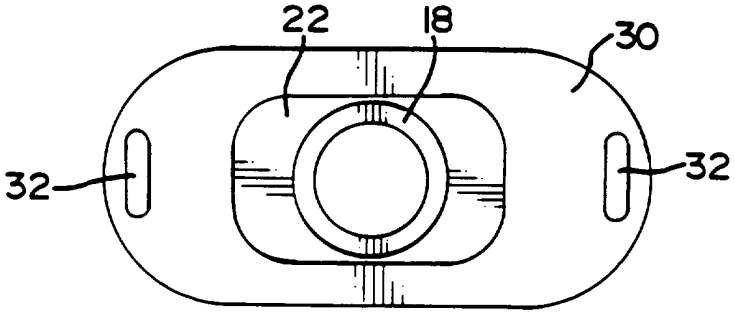

FIG 7

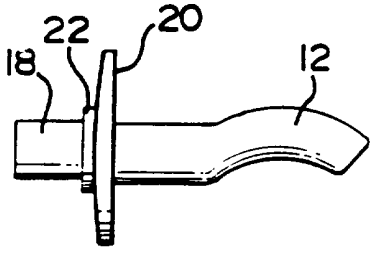

FIG 10

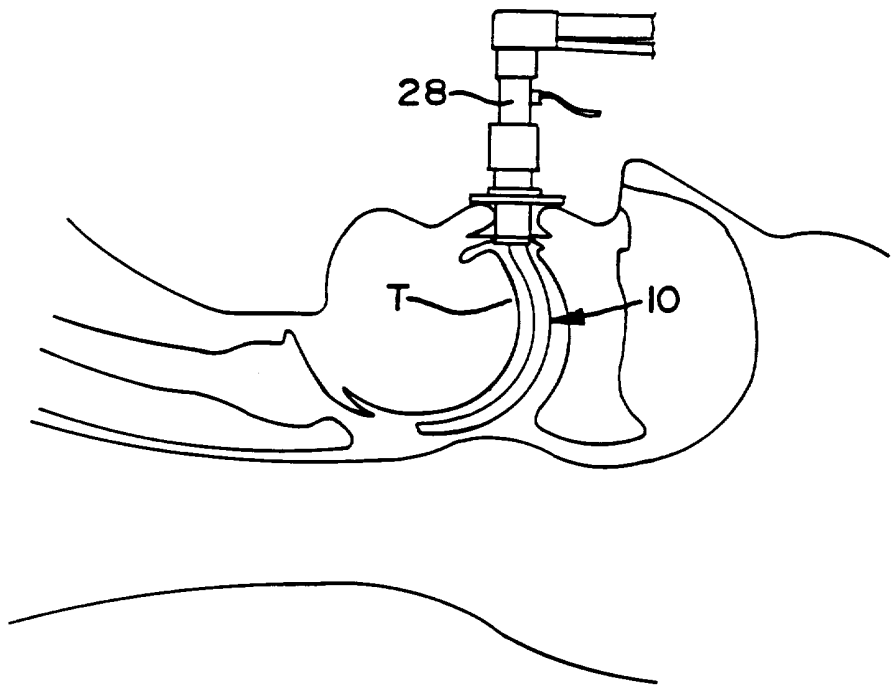

FIG 8

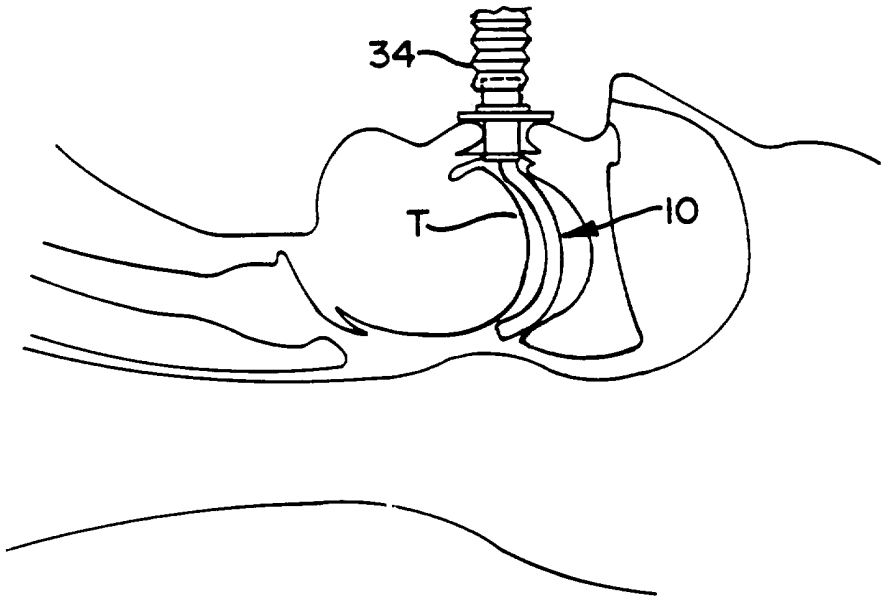

FIG 9

ORAL AIRWAY TUBE

THIS INVENTION relates to an oral airway tube.

According to the invention there is provided an oral airway tube which comprises:

a tube body for entry into a patient's mouth, the tube body having an anterior portion and a posterior portion leading rearwardly from the anterior portion, the posterior portion being anatomically curved for holding the patient's tongue forward during use;

a tubular mouth bite disposed inside the anterior portion, the mouth bite being of a material that is stiffer than the material of the anterior portion; and

a connector for connecting the airway tube to other equipment, the connector being connected to the mouth bite.

The mouth bite and the connector can be formed as a one-piece moulding, in which event the mouth bite and the connector will be of the same material. Alternatively, they can be moulded separately and thereafter united, in which event the mouth bite and the connector can be of different materials.

The mouth bite may be removably located in the anterior portion. Thus, for example, the mouth bite may be a tight sliding fit in the anterior portion. In an alternative form of the invention the unit consisting of the mouth bite and the connector may be fixed irremovably to the tube body.

The connector may be a universal (ISO) anaesthetic connector, for connection to other equipment such as that forming part of an anaesthetic

circuit or Ambu bag.

The anterior portion may be of a colourless, translucent material, and the mouth bite of a coloured material, whereby the colour of the mouth bite (and the connector if it is of the same material as the mouth bite) can serve as a size indicator.

The invention will now be described in more detail, by way of example, with reference to the accompanying drawings.

In the drawings:

Figure 1 is a side view of an oral airway tube in accordance with the invention;

Figure 2 is a plan view of the airway tube;

Figure 3 is a longitudinal section on III-III in Figure 2;

Figure 4 is a cross-section on IV-IV in Figure 3;

Figure 5 is a cross-section on V-V in Figure 3;

Figure 6 is an anterior end view, in the direction of arrow VI-VI in Figure 2;

Figure 7 is a view similar to Figure 6, but showing an alternative construction;

Figure 8 shows the airway tube in position in a patient, and connected to an anaesthetics machine;

Figure 9 shows the airway tube in position in a patient and connected to a flexible tube for purposes of mouth-to-mouth resuscitation; and

Figure 10 is a side view of an airway tube in accordance with another embodiment of the invention, particularly intended for domestic and airlines use.

Referring first to Figures 1 to 6, reference numeral 10 generally indicates an oral airway tube which comprises a tube body 12 for entry into a patient's mouth. The tube body has an anterior portion

14.1, and a posterior portion 14.2 leading rearwardly from the anterior portion and being anatomically curved to hold forward the patient's tongue T (see Figures 8 and 9). The airway tube further comprises a mouth bite 16 located inside the anterior portion 14.1, and a universal ISO connector 18 connected to the mouth bite.

The mouth bite 16 is a of a relatively stiff plastics material as compared with the plastics material of the tube body 12. The mouth bite 16 and the universal connector 18 can be of different plastics materials, being united by means of, for example, heat or ultrasonic welding. However, in a preferred form of the invention, the mouth bite 16 and the universal connector 18 are a one-piece moulding of the same relatively stiff material.

At the anterior end of the tube body 12 there is a flange 20, and at the posterior end of the universal connector 18, where the connector and the mouth bite 16 join one another, there is a flange 22. The flange 22 limits the depth to which the mouth bite 16 can be inserted into the tube body 12.

The mouth bite 16 is a tight sliding fit into the anterior portion 14.1. The fit should be tight enough so that the mouth bite 16 will not pull out of the tube body 12 during normal use.

The tube body 12 may come in different sizes, for example, sizes 00, 0, 1, 2, 3, 4, and 5, so that a range of sizes will be available for paediatric through to adult use. The mouth bite 16 will have a matching size.

A primary function of the mouth bite 16 is to provide the anterior portion 14.1 of the tube body with

a sufficient degree of rigidity so that the patient is unable to bite the tube shut. A secondary purpose of the mouth bite 16 is to provide for colour-coding. To this end the mouth bite 16 may be made from a coloured plastics material, whereas the material of the tube body 12 is colourless and translucent. The colour of the mouth bite 16 will then be able to serve as a size designation.

As can best be seen in Figures 4 and 5, the tube body 12 and the mouth bite 16 are oblong in cross-section, to provide for a comfortable fit. Also, as can best be seen in Figure 3, the edges 26 of the posterior end of the tube body 12 are rounded so as to minimise discomfort and the risk of injury to the patient. The universal connector 18 on the other hand is round in cross-section.

Referring now to Figures 8 and 9, it will be seen that when the airway tube 10 is in position in a patient's mouth, the flange 20 will be on the outside of the patient's lips. The nostrils and lips of the patient may be closed and sealed off by means of, for example, adhesive tape. The flange 20 limits the extent to which the airway tube can enter into the patient's mouth.

In Figure 8 the airway tube 10 is shown to be connected to an anaesthetics machine by means of conventional tubing 28, which would normally be connected to an anaesthetics mask which in turn is placed over the patient's mouth and nose. Because of the presence of the universal connector 18, the airway tube of the present invention can be connected to any existing anaesthetics equipment. The airway tube can be used during anaesthesia, during recovery from anaesthesia, to maintain an airway with connection to

oxygen, e.g. during an epileptic fit, or to maintain an adequate airway as a substitute for difficult intubations.

If desired, the flange 20 of the Figures 1 to 6 embodiment may be made somewhat wider. A construction which has such a wider flange is shown in Figure 7, where reference numeral 30 indicates the wider flange. There may, in this event, be an aperture 32 at each end of the flange, for attachment of a strap. This will make the airway tube particularly suitable for use with bearded patients.

Referring now to Figure 9, where the airway tube 10 is used for resuscitation, the universal connector 18 can be connected to a flexible tube 34, to eliminate mouth-to-mouth contact between the patient and the person performing the resuscitation.

Referring now to Figure 10, reference numeral 10.1 indicates an airway tube which is similar to the one shown in Figures 1 to 6, except that the posterior portion 14.2 is somewhat shorter. This embodiment is particularly suitable for supplying oxygen during emergencies, for example as part of the emergency equipment in aircraft, in place of the conventional mask, and also for domestic use in applying mouth-to-mouth resuscitation in a manner which eliminates the need for mouth-to-mouth contact.

CLAIMS:

1. An oral airway tube which comprises:

a tube body for entry into a patient's mouth, the tube body having an anterior portion and a posterior portion leading rearwardly from the anterior portion, the posterior portion being anatomically curved for holding the patient's tongue forward during use;

a tubular mouth bite disposed inside the anterior portion, the mouth bite being of a material that is stiffer than the material of the anterior portion; and

a connector for connecting the airway tube to other equipment, the connector being connected to the mouth bite.

2. An oral airway tube as claimed in claim 1, wherein the mouth bite and the connector are formed as a one-piece moulding.

3. An oral airway tube as claimed in claim 2, wherein the mouth bite is removably located in the anterior portion.

4. An oral airway tube as claimed in claim 3, wherein the mouth bite is a tight sliding fit in the anterior portion.

5. An oral airway tube as claimed in any one of the preceding claims, wherein the connector is a universal (ISO) anaesthetic connector.

6. An oral airway tube as claimed in any one of the preceding claims, wherein the anterior portion is of a colourless, translucent material, and wherein the mouth bite is of a coloured material.

7. An oral airway tube substantially as herein described and illustrated.

The Patent Office

8

Application No:	GB 9614672.5	**Examiner:**	Dr J Houlihan
Claims searched:	1-7	**Date of search:**	4 October 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A5R (REG, RGEX). A5T (TAC)

Int Cl (Ed.6): A61M 16/00

Other: ONLINE: EDOC, WPI, CLAIMS, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 0442008 A1	(MAHRT & HOERNING GMBH) column 2 lines 30-49; Figures 2,4 & 5	1-6
Y	WO 95/06492 A1	(JOHN HOPKINS UNI.) page 6 lines 3-36; page 6 line 31-page 7 line 1; Figure 1	1, 3, 4 & 6
Y	US 5318017	(ELLISON L H) column 2 line 62-column 3 line 16; Figures 1 & 3	1, 3, 4 & 6
Y	US 5165396	(DON MICHAEL T A *et. al.)* column 5 lines 41-51; column 7 lines 60-62; Claim 1, paragraph 1; Figure 1	1, 3, 4 & 6
Y	US 4559940	(McGINNIS G E *et. al.*) column 2 lines 47-51; column 3 lines 60-68; Figure 2	1 & 4
Y	US 4270531	(BLACHLY P H*)* column 2 lines 60-66; column 3 lines 52-56; column 4 lines 16-22; Figures 1, 3 & 4	1 & 4

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.