May 30, 1967 W. RÜSCH ETAL 3,322,126

ENDOTRACHEAL CATHETER

Filed April 13, 1964

Fig. 1

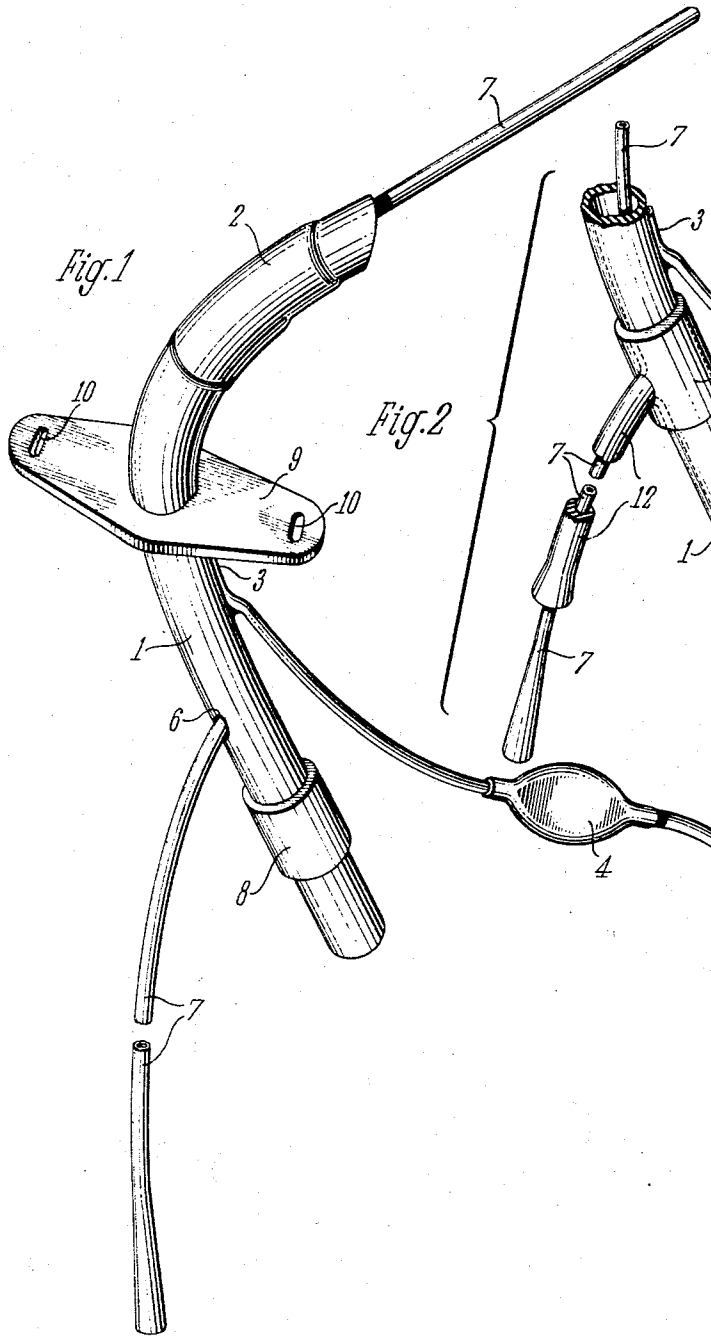
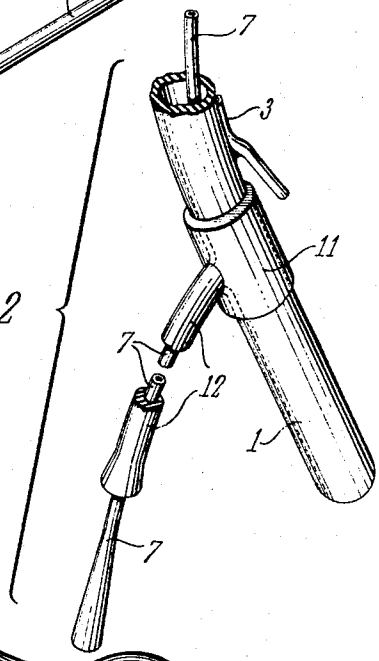


Fig. 2



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United States Patent Office 3,322,126 Patented May 30, 1967

3,322,126

ENDOTRACHEAL CATHETER

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Filed Apr. 13, 1964, Ser. No. 359,132
Claims priority, application Germany, Apr. 19, 1963, R 34,983
4 Claims. (Cl. 128—351)

The invention relates to improvements in catheters and specifically to respiration catheters especially endotracheal catheters for use after tracheotomy. The known catheters for anaesthesia or for respiration do not permit simultaneous extraction of any secretion which occurs. It was therefore necessary for secretion separation, to introduce a separate extraction catheter through the respiration catheter when the latter is in use. For this purpose however the equipment connected to the respiration catheter must be removed. After extraction of the secretion and the withdrawal of the extraction catheter the respiration catheter must be again connected with the anaesthesis or respiration device or with some other device. Apart from the fact that such manipulation is very complicated, the respiration can only be interrupted for a very short time in many cases in order not to endanger the life of the patient. This furthermore leads to the fact that the extraction of the secretion must be effected very quickly and the secretion can often only be removed inadequately. Insufficient removal of secretion can however lead to disturbances in respiration or in anaesthesia.

The invention avoids this disadvantage and consists in the fact that a section of the tube of the respiration and/or anaesthesia catheter disposed externally of the patient, is provided with an opening for introducing an extraction catheter, which opening is adapted to be closed.

The particular advantage of the invention lies in the fact that the respiration or anaesthesia or the like does not have to be interrupted for extracting a secretion. The extraction catheter is fed forward through the inside of the catheter which has already been introduced, as far as the collected secretion, and then this latter is drawn off. If extraction is not necessary or is to be interrupted, after removal of the extraction catheter the opening is again closed. This opening in the wall of the catheter tube can however also be used for introducing another catheter or the extraction catheter can be used for a different purpose, for example for introducing an additional anaesthetic or the like.

Owing to the possibility of being able to carry out simultaneously two working operations, the catheter is particularly suitable as a combined tracheotomy catheter for example for polio myelitis affections or for tracheotomic accident cases, especially for continuous respiration. Such a catheter can however equally well be employed as an endotracheal catheter or for nasal inspiration for anaesthesis purposes.

The opening in the catheter tube can be closed in a wide variety of ways, for example in the simplest case a piece of surgical plaster. In one embodiment of the invention however a cylindrical ring is displaceable on the catheter tube which can be slid over the opening when the extraction catheter is removed from or drawn out of the respiration catheter.

In one constructional example of the invention a tubular portion is associated with the edges of the opening for guiding the extraction catheter, the internal diameter of which is larger than the outer diameter of the extraction catheter. Such an embodiment permits the introduction of the extraction catheter to be effected otherwise than in the immediate neighbourhood of the patient. Such a tubular element is then closed for example by means of

a plug. Such a tubular member can also be formed in a tubular section which is fitted concentrically to the tube of the respiration catheter in the region of the opening. This embodiment has certain advantages in production.

Moreover a catheter holder disc is arranged on the respiration catheter tube. This disc may be displaced against a certain resistance on the catheter tube. It embodies openings for application of fastening means for example a binding or the like.

If the catheter is produced from synthetic resin or from rubber the resistance opposing displacement is obtained by the fact that the internal diameter in the bore of the catheter holder disc is so chosen that it is only of just the same size as the outer diameter of the catheter tube or is even slightly smaller.

The catheter can be produced from natural or synthetic rubber or mixtures thereof. The catheter can also be formed as synthetic materials, for example polyvinyl chloride, a polyamide or a polyethylene. Individual parts of the instrument can be produced from different work materials.

Further features of the invention will be apparent from the following description of one constructional form of the invention in conjunction with the following claims and the accompanying drawings. The individual features can be used on their own or several of them may be combined in one embodiment.

FIG. 1 shows an embodiment of the invention as a general view, and

FIG. 2 shows a detail of a second embodiment of the invention.

The embodiment shown in the drawings embodies a catheter tube **1** which consists of a soft rubber and is bent at the end which is to be introduced into the body. At the inner end of the catheter tube **1** there is provided an inflatable holder section **2**, which is connected through a pipe **3** with an operating bulb **4**, the feed pipe **5** of which is adapted to be closed.

An opening **6** is provided at a portion of the tube of the respiration and/or anaesthesis catheter, disposed externally of the patient, which serves for introduction of an extraction catheter **7** into the catheter tube **1**. The extraction catheter **7** can for example consist of synthetic material or the like in order that it can be slid into the soft respiration catheter without undue frictional resistance, and possesses the stiffness necessary for it to be introduced. The extraction catheter is inserted so far inwardly for example beyond the inner end of the respiration catheter, in order that it can extract any secretion which would disturb respiration or anaethesis.

A concentric ring **8** is arranged externally on the catheter tube **1** which can be displaced on the catheter tube against a frictional resistance and when the extraction catheter **7** is removed, it can be slipped to a position over the recess **6**. This ring **8** can be formed of the same material as the catheter tube **1**, but in other embodiments of the invention it may consist of other materials, for example metal or the like.

Also a catheter holder disc **9** is displaceably mounted on the catheter tube **1**, again against resistance. The catheter holder disc **9** embodies recesses **10** for the entry of fastening means. The catheter holder disc **9** can for example consist of a soft rubber.

The pipe **3** leading from the inflatable section **2** to the operating bulb **4** is inserted in the region of that section of the catheter which is inserted into the body of the patient under treatment.

Catheter holder discs are known in association with this type of respiration catheter, but these catheter holder discs in the known catheters were fixed connected with the catheter tube. If however the catheter holder disc is displaceable on the catheter tube against resistance, as in

the embodiment shown herein, the catheter holder disc can be better adapted to the body configuration of the patient.

In another embodiment of the invention, shown in part in FIG. 2, a tubular section **11** is formed in the catheter tube **1** in the region of the opening **6** having a tubular portion and an extension part **12** for receiving the extraction catheter **7**. This portion is of larger internal diameter than the outer diameter of the catheter **7** and is adapted to be closed by means of a plug when the catheter **7** is not in place. The latter includes a flexible tubular part of desired length and permits the introduction of the extraction catheter at some distance from the patient. The tube **12** can however be also fastened directly to the edges of the opening **6** in the catheter tube **1**, but such an embodiment is somewhat more difficult to produce than if a tubular section **11** serves for fastening the tube **12**.

What I claim is:

1. An endotracheal catheter for insertion through and into the trachea of a patient after a tracheotomy and for remaining in the trachea, comprising: a main catheter tube having radially inflatable bulb means axially fixed to said main tube on the section insertable in the trachea for expansion into sealing engagement with the trachea, and control bulb means for selectively inflating said inflatable bulb means; support disc means for engagement with the outer portion of the patient's neck and frictionally surrounding said main catheter tube for axial adjustment to define the main trachea tube section insertable in the trachea on one side and the main trachea tube section outside of the patient on the opposite side; apertured means in said support disc means for securing said support disc means to the patient with holding means; aperture means in the side wall of said main catheter tube at said outside section for receiving a suction catheter to be inserted within said main catheter tube for removing fluids from the patient without interfering with the operation of said main catheter tube; and valve means for selectively opening said aperture means for receiving the suction catheter and closing said aperture means for preventing interference with the operation of said main catheter when the suction catheter is removed.

2. The catheter of claim **1**, wherein said valve means includes tubular sleeve means displaceably mounted on said main catheter tube for displacement between an open position exposing said aperture means and a closed position sealing said aperture means.

3. The catheter of claim **1**, including additional tube means secured in fluid communication to and extending outwardly from said aperture means and having an inner diameter larger than the outer diameter of the suction catheter for guiding the suction catheter into said main catheter tube and for providing a suction catheter entrance opening spaced from the patient and said main catheter tube for selective closure by a plug.

4. The catheter of claim **3**, wherein said valve means includes tubular sleeve means displaceably mounted on said main catheter tube for displacement between an open position exposing said aperture means and a closed position sealing said aperture means; said additional tube means being fixedly secured to said sleeve means for alignment with said aperture means in the open position.

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