

Jan. 10, 1967

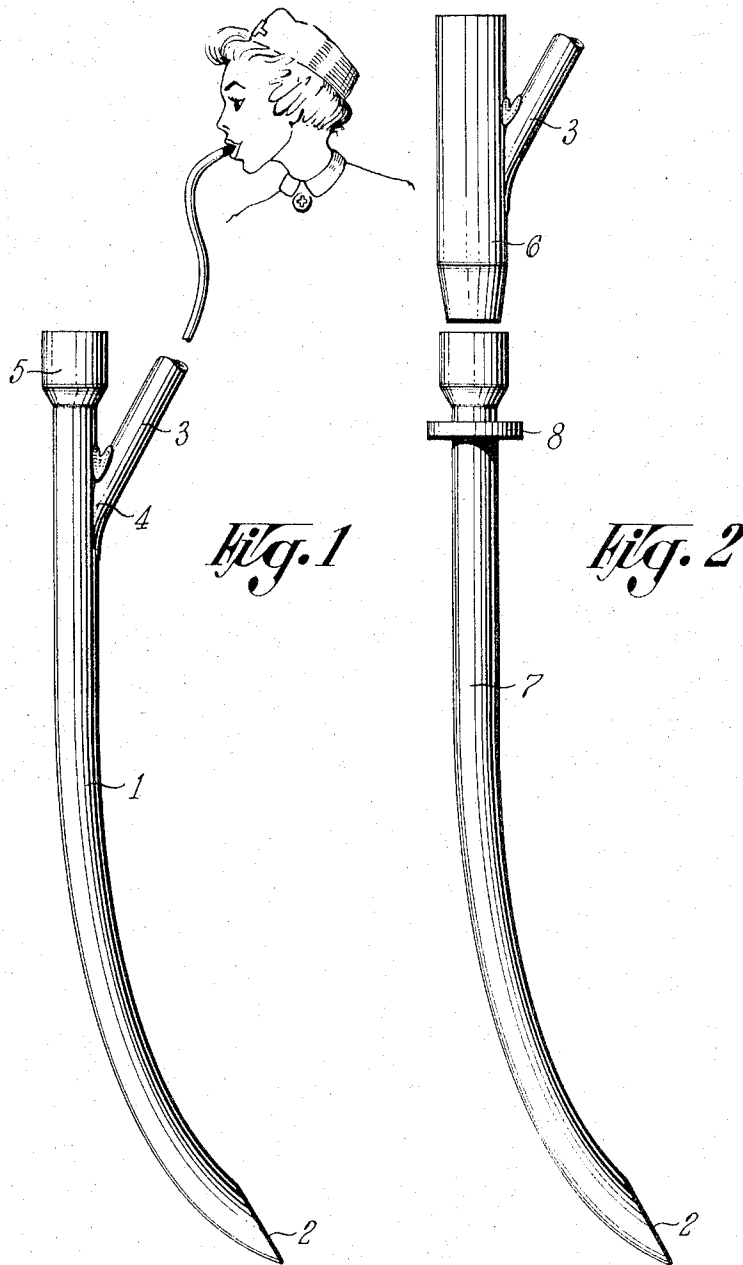
W. RÜSCH

3,297,027

DEVICE FOR MOUTH TO MOUTH RESPIRATION

Filed April 22, 1963

2 Sheets-Sheet 1



INVENTOR

Willy Ruesch

Dicke & Craig

BY

ATTORNEYS

Jan. 10, 1967

W. RÜSCH

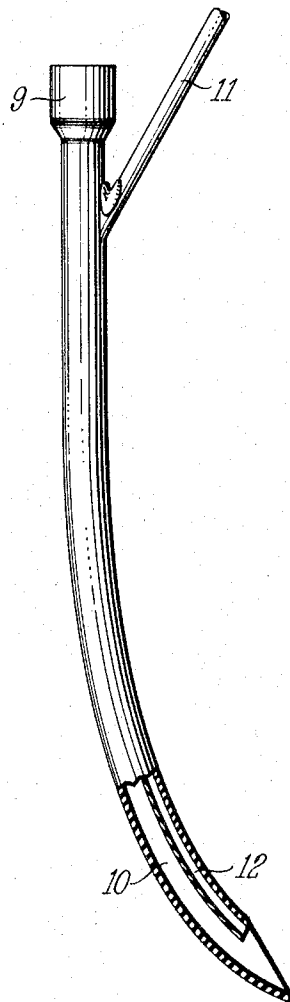
3,297,027

DEVICE FOR MOUTH TO MOUTH RESPIRATION

Filed April 22, 1963

2 Sheets-Sheet 2

Fig. 3



INVENTOR

Willy Ruesch

Dicke & Craig

BY

ATTORNEYS

1

3,297,027

DEVICE FOR MOUTH TO MOUTH RESPIRATION
Willy Rüsçh, Rommelshausen, near Stuttgart, Wurttemberg, Germany, assignor to Willy Rüsçh KG., Rommelshausen, Stuttgart, Wurttemberg, Germany
Filed Apr. 22, 1963, Ser. No. 274,587
Claims priority, application Germany, May 12, 1962, R 32,690
6 Claims. (Cl. 128—145.5)

The invention relates to a respiration device for mouth-to-mouth or mouth-to-nose respiration with a catheter for introduction into the hypopharynx. Known respiration devices for mouth-to-mouth respiration consist of a tube formed at its forward end as a catheter which is introduced through the mouth into the hypopharynx. The person carrying out the respiration takes the outer end of the rubber tube in the mouth on stoppage of respiration and forces her expiration breath into the lungs of the patient. Then this person frees the outer end of the catheter tube in order that the air blown into the lungs of the patient, can flow out. As a rule mucus or often vomiting passes out with the outgoing air which soils the outer end of the tube which the person carrying out the respiration must take into the mouth.

As against this the invention consists in the fact that the catheter embodies a branch at its outer end one limb of which serves as an outlet for the expiration air of the patient whereas the other branch serves for blowing in the respiration air.

The particular advantage of the invention lies in the fact that the expiration air of the patient has a separate path which can be definitely closed with one finger during blowing in the air. On expiration of the patient this outlet is released. In the event of respiration any vomiting or mucus passes out through this outlet so that it is prevented from coming to the end of that branch which is taken in the mouth by the person carrying out the respiration.

A further advantage of the invention lies in the fact that the person carrying out the respiration can leave the end of the tube in his mouth and, as was necessary with the known respiration devices, does not have to remove the end of the tube from the mouth and turn it away from the face in order that she shall not be sprayed with the outgoing mucus or the like. Respiration is thus considerably facilitated and simplified by the device of the present invention, and the person carrying out the respiration does not have to exert so much effort.

Preferably the branch serving for introducing the respiration air is so long that the person carrying out the respiration can adopt an upright stand.

In order to ensure that as little as possible of the mucus carried by the expiration air from the patient shall enter the branch for the introduction of the respiration air, the catheter tube can be introduced straight through the branch point whereas the branch serving for introducing the respiration air opens laterally into this tube. In other constructional forms of the invention, obviously a regular and uniform forking can be provided.

Such an arrangement also fulfills the requirements since in the branch serving for the introduction of the respiration air the air always flows to the branch point so that the probability that the air-mucus passes onwards against the flow direction, is comparatively small. Conveniently, however, in this case during the respiration of the patient this branch is closed by hand or with the lips or teeth. This is not absolutely necessary if, as in the first constructional form of the invention, this branch serving for introducing the respiration air, opens laterally into the catheter tube led straight through the branch point.

2

In order to reduce as far as possible the effort of the person carrying out the respiration, further provisions can be made in order to make it unnecessary to close the branch serving for introduction of the respiration air during expiration of the patient. For this purpose according to one embodiment of the invention the mouth cross-section by which the branch serving for introduction of the respiration air opens into the catheter tube, is smaller than the internal diameter of the catheter tube. The branch for introducing the respiration air can have over its whole length a smaller internal diameter than the catheter tube. Independently of whether the internal diameter of the branch for the respiration air is as large as or smaller than the internal diameter of the catheter tube, the mouth cross-section by which this branch opens at the branch point into the catheter tube, can be smaller than the internal diameter of the catheter tube, and even smaller than the internal diameter of the branch for the respiration air. Thereby the mucus contained in the expiration air of the patient is prevented from entering into the branch supplying the respiration air with a sufficient degree of safety for all practical purposes.

The outer end of the branch through which the expiration air of the patient passes out, may embody an enlargement in order that this end can be conveniently closed with one finger during introduction of the respiration air. In order that this end can be held conveniently in the hand the enlargement of the tube end is so formed that it provides a shoulder on the periphery. Alternatively, however, adjacent this tube end a ring-like thickening or even a disc can be provided on the periphery.

In a particularly preferred embodiment of the invention the device is formed in two parts in such manner that the part having the branch is separate from the catheter part to be introduced in the hypopharynx and is adapted to be inserted thereon. Hence the catheter part can be inserted into a patient immediately either through the nose or through the mouth into the hypopharynx. If stoppage of breathing occurs in the course of manipulation respiration can be immediately carried out by inserting the part containing the branch. Preferably the catheter part is in the form of a naso-pharyngeal catheter, so that respiration and the introduction of a catheter is also permitted when the patient has convulsion of the jaws or the appearance of jaw convulsion must be feared.

Preferably the device consists of a highly flexible soft rubber mixture of PVC-mixture tube and this instrument must be flexible and soft in order that it shall cause no damage during introduction.

Preferably the instrument consists of a rubber mixture which contains a substantial amount of softening agent and little filler.

Further features of the invention will be apparent from the following description of one embodiment of the invention in association with the claims and the drawings. The individual features can be utilised on their own or several of them may be employed in one embodiment of the invention.

Embodiments of the invention are shown by way of example in FIGS. 1, 2 and 3 of the accompanying drawings.

The embodiment of the invention shown in FIG. 1 comprises a catheter tube 1 of soft highly flexible rubber. This catheter tube is cut off obliquely at its forward end to form a tip 2. The edges are cleanly rounded. The catheter tube has a comparatively large internal diameter. Adjacent its outer end a comparatively long rubber tube 3 is fitted laterally to the catheter tube 1. The mouth cross-section 4 by which the tube 3 opens into the catheter tube 1, is smaller than the internal diameter of the rubber tube 3. The outer end of the tube 3 is taken in the

3

mouth of the person carrying out the respiration. The respiration air is forced into the catheter tube 1 by means of this tube 3.

The outer end of the catheter tube 1 is widened out to form a shoulder 5 apparent on the periphery. This end is closed with the thumb during forcing in the respiration air. On expiration of the patient this end is released so that the expiration air and mucus possibly carried with it can pass out through this end.

Instead of the shoulder 5 an enlarged rib or a disc can be provided on the periphery of the outer end of this catheter tube.

In FIG. 2 another embodiment of the invention is shown. The part 6 of the catheter tube embodying the branch is adapted to be inserted on to the part 7 of the catheter tube to be introduced into the hypopharynx. For this purpose the part 6 is thinned off at its inner end and the outer end of the catheter part 7 is enlarged. The catheter part 7 is intended for introduction through the nose, it embodies a displaceable disc 8. The catheter 7 is introduced into the nose at the beginning of treatment so as to avoid the tongue falling back and thus closing off the trachea. On stoppage of breathing the part 6 is immediately inserted on the outer end of the part 7 and respiration can be carried out. A further advantage of this embodiment of the invention lies in the fact that the part 6 does not necessarily have to be formed from a specially flexible soft material as is the case for the catheter part 7 to be introduced through the nose. The part 6 can be produced from a cheaper material mixture.

In the embodiment of the invention shown in FIG. 3 the catheter is two-way. The one outlet 9 is connected with a duct 10 while the branch 11 is connected with the duct 12. The duct 12 ends directly in front of the tip of the catheter which, with the catheter introduced, is already inserted in the pharynx. The branch 11 can be constructed as a more or less long tube. The particular advantage of this embodiment of the invention lies in the fact that mucus collecting in the duct 10 is not drawn back again into the lungs on each inspiration since the feed path 12 and the duct 10 for the expired air are separated from one another as far as possible. This embodiment also permits oxygen or a soporific gas or the like to be fed directly into the lungs.

A further advantage of the two-way feature of this naso-pharyngeal catheter lies in the fact that each duct can be attached to a separate appliance for example one duct to a respiration appliance and the second duct to a soporific appliance.

What I claim is:

1. In a respiration device for mouth-to-mouth or mouth-to-nose respiration, the invention essentially consisting of:

an elongated, substantially erect soft pliable tube, means for introducing respiratory air orally into and through said elongated tube consisting of a second tube angularly disposed with respect to said elongated tube and in communication with the hollow interior adjacent to one end thereof,

said elongated tube being essentially linear in the region of said second tube so as to provide less resistance to the passage of fluids than said second tube, said one end of said elongated tube being provided with vent means having an enlarged outer surface portion with an outer diameter greater than the outer diameter of the elongated tube body.

2. In a respiration device for mouth-to-mouth or mouth-to-nose respiration, the invention essentially consisting of:

an elongated, substantially erect soft pliable tube, means for introducing respiratory air orally into and through said elongated tube consisting of a second tube angularly disposed with respect to said elongated tube and in communication with the hollow interior adjacent to one end thereof,

4

said elongated tube being essentially linear in the region of said second tube so as to provide less resistance to the passage of fluids than said second tube,

said one end of said elongated tube being provided with vent means having an enlarged outer surface portion with an outer diameter greater than the outer diameter of the elongated tube body,

said air-introducing means further including a cross-section at one end of said second tube having an inner diameter smaller than the inner diameter of said second tube.

3. In a respiration device for mouth-to-mouth or mouth-to-nose respiration, the invention essentially consisting of:

an elongated, substantially erect soft pliable tube, means for introducing respiratory air orally into and through said elongated tube consisting of a second tube angularly disposed with respect to said elongated tube and in communication with the hollow interior adjacent to one end thereof,

said elongated tube being essentially linear in the region of said second tube so as to provide less resistance to the passage of fluids than said second tube, said one end of said elongated tube being provided with vent means having an enlarged outer surface portion with an outer diameter greater than the outer diameter of the elongated tube body,

said air-introducing means further including a cross-section at one end of said second tube having an inner diameter smaller than the inner diameter of said second tube,

said second tube having an internal diameter smaller than the internal diameter of said elongated tube.

4. A respiration device for mouth-to-nose respiration, comprising:

naso-pharyngeal catheter means for providing an air conduit through the nose into the hypopharynx in the form of an elongated, substantially erect pliable tube,

means for introducing air orally into and through said elongated tube consisting of a second tube angularly disposed with respect to said elongated tube and in communication with the hollow interior at one end thereof,

said air introducing means cooperating with a separable portion of said elongated tube forming said one end thereof, said separable portion having a diameter greater than the diameter of the elongated tube body.

5. A respiration device for mouth-to-nose respiration, comprising:

naso-pharyngeal catheter means for providing an air conduit through the nose into the hypopharynx in the form of an elongated, substantially erect pliable tube, means for introducing air orally into and through said elongated tube consisting of a second tube angularly disposed with respect to said elongated tube and in communication with the hollow interior at one end thereof,

said air-introducing means cooperating with a separable portion of said elongated tube forming said one end thereof, said separable portion having a diameter greater than the diameter of the elongated tube body,

said elongated tube being formed from a soft, highly flexible polyvinylchloride.

6. A respiration device for mouth-to-nose respiration, comprising:

naso-pharyngeal catheter means for providing an air conduit through the nose into the hypopharynx in the form of an elongated, substantially erect pliable tube,

means for introducing air orally into and through said elongated tube consisting of a second tube angularly

5

disposed with respect to said elongated tube and in communication with the hollow interior at one end thereof,

said air-introducing means cooperating with a separable portion of said elongated tube forming said one end thereof, said separable portion having a diameter greater than the diameter of the elongated tube body,

said elongated tube being formed from a soft, highly pliable polyvinylchloride,

said separable portion of said elongated tube being formed of a relatively more rigid material than the elongated tube body and including a vent means for

6

preventing the flow of fluids from said elongated tube body through said second tube.

References Cited by the Examiner

UNITED STATES PATENTS

2,537,674	1/1951	Johnson	-----	128—348
2,705,959	4/1955	Elmore	-----	128—351
2,912,982	11/1959	Barsky	-----	128—351
3,060,927	10/1962	Gattone	-----	128—29

RICHARD A. GAUDET, *Primary Examiner.*

C. F. ROSENBAUM, *Assistant Examiner.*