

## PATENT ASSIGNMENT COVER SHEET

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<table border="1"> <tr> <td>Name:</td> <td>DRAEGER MEDICAL GMBH</td> </tr> <tr> <td>Street Address:</td> <td>MOISLINGER ALLEE 53-55</td> </tr> <tr> <td>City:</td> <td>LUEBECK</td> </tr> <tr> <td>State/Country:</td> <td>GERMANY</td> </tr> <tr> <td>Postal Code:</td> <td>D-23558</td> </tr> </table>		Name:	DRAEGER MEDICAL GMBH	Street Address:	MOISLINGER ALLEE 53-55	City:	LUEBECK	State/Country:	GERMANY	Postal Code:	D-23558
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Application Number:	14063009										
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## DECLARATION FOR PATENT APPLICATION AND ASSIGNMENT

Title of the Invention: ELBOW FOR A RESPIRATION MASK

As a below named inventor, I hereby declare that:

This declaration is directed to:

☒ The attached application, or

☐ United States application or PCT international application number \_\_\_\_\_  
filed on \_\_\_\_\_.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

WHEREAS, Dräger Medical GmbH,

(hereinafter referred to as Assignee) having a place of business at:  
Moislinger Allee 53-55, D-23558 Lübeck, GERMANY

is desirous of acquiring the entire right, title and interest to said invention and in the Letters Patent to be obtained therefor from the United States;

NOW THEREFORE, be it known by all whom it may concern, that for and in consideration of the sum of One Dollar (\$1.00) (or the equivalent thereof in foreign currency) and other valuable consideration, the receipt of which is hereby acknowledged, I have assigned, sold and set over and by these presents do assign, sell and set over unto the said Assignee for the territory of the United States of America and not elsewhere, the full and exclusive right, title and interest in and to the said invention, said invention, application and Letters Patent to be held and enjoyed by the said Assignee for its own use and behoof and for the use and behoof of its successors and assigns to the full end of the term for which said Letters Patent is granted, as fully and entirely as the same would have been held by me had this Assignment and sale not been made.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than (5) years, or both.

LEGAL NAME OF INVENTOR

INVENTOR: Alexandra GAWRYSCH

→ Inventor's signature



→ Date

27.09.2013

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LEGAL NAME OF INVENTOR

INVENTOR: Krisztina SOLTÉSZ

→ Inventor's signature K. Soltész → Date 2013-03-25

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LEGAL NAME OF INVENTOR

INVENTOR: Oliver WALLNEWITZ

→ Inventor's signature



→ Date

2013-09-25

Docket #74543

## **ELBOW FOR A RESPIRATION MASK**

### **CROSS REFERENCE TO RELATED APPLICATIONS**

**[0001]** This application claims the benefit of priority under 35 U.S.C. § 119 of German Patent Application DE 10 2012 020 917.7 filed October 25, 2012, the entire contents of which are incorporated herein by reference.

5

### **FIELD OF THE INVENTION**

**[0002]** The present invention pertains to an elbow for a respiration mask for the artificial respiration of a patient, and to a mask system and to a respiration system.

### **BACKGROUND OF THE INVENTION**

**[0003]** Artificial or assisted respiration of patients is necessary for various medical applications. Respirators are used for the artificial respiration of patients. The expiration gas

10

expired by the patient can be used again at least partly as inspiration gas in some respirators, which are used especially in the area of anesthesia, i.e., these respirators are respiration systems with a breathing air circulation system.

**[0004]** Artificial respiration of patients is performed in the clinical area or even in case of

5 respiration at home. For this, the breathing gas is to be fed to the patient through at least one breathing tube, especially the inspiration tube. The inspiration tube and an expiration tube are connected here, in general, to a Y-piece, and this is in turn connected to an elbow. The breathing gas is fed through the elbow to a respiration mask, which lies on the area of the face of the patient. The angular tube defines a breathing gas duct, through which the breathing air can be fed  
10 to the patient and the expired air can be removed. A breathing tube or the Y-piece can be connected to a tube port of the elbow and the respiration mask can be connected to a mask port of the elbow. The elbow has an anti-suffocation valve and carbon dioxide expiration openings. The anti-suffocation valve is used to prevent the patient from suffocating, especially in case of a defect of or damage to the respirator. The patient can thus draw breathing air directly from the  
15 environment of the elbow. Higher concentrations of carbon dioxide shall be prevented from building up in dead spaces of the elbow with the carbon dioxide expiration openings. It may be necessary for various applications of the elbow to have both the anti-suffocation valve and the carbon dioxide expiration openings opened or activated or to have only the anti-suffocation valve opened and to have the carbon dioxide expiration openings closed or deactivated. A complicated  
20 activation and deactivation by means of different switching members at the elbow is disadvantageously necessary for this.

An elbow with an anti-suffocation valve is known from US 5 647 355. The anti-suffocation valve makes possible an automatic connection to the ambient air in case of a defect and has a primary inlet and a secondary inlet as well as an outlet.

## SUMMARY OF THE INVENTION

5     **[0005]**         An object of the present invention is to make available an elbow for a mask system or a respiration system, which can be handled easily and can be switched into different opened and closed states for the anti-suffocation valve and the carbon dioxide expiration openings.

10     **[0006]**         This object is accomplished with an elbow, comprising an angular tube, which defines a breathing gas duct, with a tube port with an inlet opening for connecting a breathing tube or Y-piece and with a mask port with an outlet opening for connecting the respiration mask, an anti-suffocation valve, and carbon dioxide expiration openings, wherein the elbow comprises only one switching member for activating and deactivating the anti-suffocation valve and carbon dioxide expiration openings. The elbow has only one switching member for activating and  
15     deactivating both the anti-suffocation valve and the carbon dioxide expiration openings. As a result, the elbow can be actuated in an especially simple manner, because both the anti-suffocation valve and the carbon dioxide expiration openings can be activated and deactivated, i.e., opened and closed, with the only one switching member. The elbow can thus be handled especially simply and comfortably for opening and closing the anti-suffocation valve and the



carbon dioxide expiration openings.

**[0007]** In an additional embodiment, the angular tube has a first straight section with an inlet opening, a second straight section with an outlet opening and a tube bend, e.g., with a curvature between 30° and 120°, especially in the range of 90°. The angular tube advantageously  
5 has the first and second sections and no bend. The angular tube is thus designed as a straight piece of tube in this embodiment. The bend preferably has a curvature at an angle between 0° and 180°.

**[0008]** The switching member is designed especially as a ring, especially a rotating ring, a lever, a slide or a rotating wheel. A ring, especially a rotating ring, at the elbow can be actuated  
10 by the user of the elbow in an especially simple manner; in particular, the ring may be mounted pivotably about an axis of rotation and/or mounted movably in the direction of a longitudinal axis of the elbow for different switching positions of the switching member.

**[0009]** In another embodiment, the elbow comprises a first actuating element for activating and deactivating the anti-suffocation valve at the anti-suffocation valve and a second  
15 actuating element for activating and deactivating the carbon dioxide expiration openings at the carbon dioxide expiration openings.

**[0010]** In an additional embodiment, the first and second actuating elements are in functional mechanical connection, especially with a mechanism, with the switching member, so

that the first and second actuating elements can be moved by means of the only one switching member between an activation position and a deactivation position, and/or the elbow comprises a mechanism for mechanically connecting the switching member with the first and second actuating elements. The first and second actuating elements are mobile or movable between an activation position and a deactivation position, and this can be performed by means of the only one switching member. Thus, both the first actuating element and the second actuating element can be moved or movable between the activation position and the deactivation position by means of the only one switching member. The mechanism is advantageously necessary for also making it possible to move both the first and second actuating elements between the activation position and the deactivation position by means of the only one switching member. If the switching member is designed, for example, as a rotating wheel, only a rotating motion can be performed with the switching member, and the first and/or second actuating element performs, on the other hand, a translatory motion between the activation position and the deactivation position and vice versa. The mechanism is necessary for this reason to convert the rotary motions of the rotating wheel as a switching member into the translatory motion of the first and/or second actuating element and vice versa.

**[0011]** The first actuating element is preferably designed as a flap, a roller blind or a diaphragm, especially an elastically deformable diaphragm, and/or the switching member is arranged at the elbow on the outside and/or the first and/or second actuating member is arranged at the elbow on the inside, especially within the breathing gas duct. An anti-suffocation opening at the angular tube can be opened and closed by means of a flap or diaphragm in an especially

simple manner, so that the flap or diaphragm as a first actuating element is part of the anti-suffocation valve.

**[0012]** A fork part is fastened to the switching member, especially the ring, in one variant, so that the fork part also performs a motion of the switching member and there is no contact between the fork part and the flap or diaphragm in the activation position of the fork part and the fork part is in contact with the flap or diaphragm in the deactivation position of the fork part and an anti-suffocation opening of the anti-suffocation valve is closed because of the contact with the valve or diaphragm. The flap or diaphragm can be moved in a simple manner between the activation position and the deactivation position by means of the fork part or lever part, which is connected especially rigidly to the actuating member.

**[0013]** The second actuating member is preferably formed by the switching member, especially the ring, or the second actuating element is formed by a flap, a roller blind or a diaphragm. The second actuating element may be formed by the switching member itself or by a separate component, e.g., a flap, a roller blind or a diaphragm.

**[0014]** The switching member is mounted movably between at least three different switching positions in another embodiment.

**[0015]** In particular, the anti-suffocation valve and the carbon dioxide expiration openings are activated in a first switching position of the switching member, the anti-suffocation

valve is activated and the carbon dioxide expiration openings are deactivated in a second switching position of the switching member, and the anti-suffocation valve is deactivated and the carbon dioxide expiration openings are deactivated in a third switching position of the switching member.

5     **[0016]**         The anti-suffocation valve is deactivated and the carbon dioxide expiration openings are activated in a fourth switching position of the switching member in another embodiment.

10     **[0017]**         In an additional variant, the ring is mounted movably on the outside at a straight section of the angular tube in the direction of a longitudinal axis of the straight section. The ring surrounds on the outside the angular tube, extending completely around especially a straight section of the angular tube, and the ring is preferably made coaxial and/or concentric with a longitudinal axis of the straight section of the angular tube, at which the ring is arranged.

15     **[0018]**         In another variant, the ring is designed as a rotating ring and is rotatable about an axis of rotation, which corresponds to the longitudinal axis of the straight section of the angular tube and/or the ring is connected movably with the angular tube by means of a threaded connection and/or a sliding block guide and/or the mechanism and can especially be fixed detachably in the different switching positions by means of the threaded connection and/or the sliding block guide and/or the mechanism. The ring is additionally rotatable or pivotable about an axis of rotation, so that the ring can be fixed detachably as a result as a rotating ring in the

different switching positions based on this rotary or pivoting motion. To move the ring as a rotating ring from the first switching position into the second switching position, the rotating ring is to be rotated, for example, at first about the axis of rotation in order to detach the ring from the first switching position in its fixed position, after which the ring is to be moved as a rotating ring in the direction of the longitudinal axis by a translatory motion, and the ring can be detachably fixed as a rotating ring in the second switching position by means of an additional rotary motion. This analogously applies to further switching positions of the rotating ring.

**[0019]** Mask system according to the present invention with a respiration mask and with an elbow, wherein the elbow is designed as an elbow described in this patent application.

**[0020]** Respiration system according to the present invention, comprising a respirator, at least one breathing tube, an elbow and a respiration mask, wherein the elbow is designed as an elbow described in this patent application.

**[0021]** The angular tube is preferably a one-part or multipart angular tube.

**[0022]** In particular, only one carbon dioxide expiration opening, especially one large carbon dioxide expiration opening, will be considered as carbon dioxide expiration openings.

**[0023]** In another embodiment, the elbow consists at least partly and especially entirely of plastic.

[0024] The respirator comprises, in particular, an inspiration tube and an expiration tube and/or the respirator has a Y-piece, and the inspiration tube and the expiration tube are preferably connected to the Y-piece.

[0025] In another embodiment, the respirator comprises a feed means for feeding oxygen  
5 to the inspiration gas.

[0026] In an additional embodiment, the respirator comprises a gas delivery means. The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to  
10 the accompanying drawings and descriptive matter in which preferred embodiments of the invention are illustrated.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0027] Figure 1 is a simplified view of a respirator;

[0028] Figure 2 is a longitudinal sectional view of an elbow with an activated  
15 anti-suffocation valve and activated carbon dioxide expiration openings;

[0029] Figure 3 is a longitudinal sectional view of an elbow with an activated

anti-suffocation valve and deactivated carbon dioxide expiration openings; and

**[0030]** Figure 4 is a longitudinal sectional view of an elbow with a deactivated anti-suffocation valve and activated carbon dioxide expiration openings.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 **[0031]** Referring to the drawings in particular, Figure 1 shows a respirator 2. The inspiration gas fed to the patient to be respired is fed to the patient through an inspiration tube 5 as a breathing tube 6 as part of a breathing air line system. After following through the inspiration tube 5 and a Y-piece 8, the inspiration gas is fed to the patient through an elbow 1 and a respiration mask 9. The air expired by the patient is removed through an expiration tube 6  
10 acting as a breathing tube 7. The respirator 2 forms a respiration system 3 with the breathing tube 7, the Y-piece 8, the elbow 1 and the respiration mask 9. The elbow 1 and the respiration mask 9 form a mask system 4.

**[0032]** The respirator 2 can be connected to the power supply system of a hospital with a power connection cable, not shown, as well as a power plug. In addition, the respirator 2 has gas  
15 supply lines (not shown) for connection to a central oxygen and/or air and/or nitrous oxide supply of the hospital.

**[0033]** Figures 2 through 4 show a longitudinal view of the elbow 1. The elbow 1 has a multipart angular tube 30 made of thermoplastic plastic, which defines a breathing gas duct 10

for passing through expiration gas and inspiration gas or breathing air. The angular tube 30 comprises a first straight section 15 with an inlet opening 12 for introducing the inspiration gas and a second straight section 16 with an outlet opening 14 for discharging the inspiration gas into the respiration mask 9. The inlet and outlet openings 12, 14 are used, furthermore, in the reversed manner for passing through the expiration gas. A tube port 11 for joining or connection to the Y-piece 8 or to a breathing tube 7 is provided at the first straight section 15. A mask port 13 is analogously provided at the second straight section 16 for connecting or fastening the respiration mask 9. The first and second straight sections 15, 16 are connected to one another by means of a bend 17, which has a curvature of essentially 90°. The first and second sections 15, 16 or a longitudinal axis 28 of the first and second straight sections 15, 16, where only the longitudinal axis 28 of the first section 15 is shown, are at essentially right angles to one another as a result.

**[0034]** The elbow 1 is provided, furthermore, with an anti-suffocation valve 18. The anti-suffocation valve 18 is formed by an anti-suffocation opening indicated by broken lines in Figures 2 through 4 as well as a diaphragm 25. The anti-suffocation opening of the anti-suffocation valve 18 can be opened and closed by means of diaphragm 25. With the anti-suffocation valve 18 opened or with an anti-suffocation opening opened, the anti-suffocation valve is activated, and, conversely, the anti-suffocation valve 18 is deactivated in case of an anti-suffocation opening closed by diaphragm 25. The anti-suffocation valve 18 is used to continue to make respiration of the patient with air from the environment possible in case of damage to or failure at the respirator 2. Air can be fed from the environment for respirating the patient to be



respired artificially directly through the elbow 1 by means of the anti-suffocation valve 18.

**[0035]** Carbon dioxide may collect in dead spaces of the elbow 1. The elbow 1 is additionally provided for this reason with carbon dioxide expiration openings (a carbon dioxide opening arrangement of one or more openings) 19. The carbon dioxide can be removed through the carbon dioxide expiration openings 19 into the environment. With carbon dioxide expiration openings 19 activated, these are opened, and they are closed when the carbon dioxide expiration openings 19 are deactivated. The elbow 1 is provided, furthermore, with only one switching member 20 for both activating and deactivating the anti-suffocation valve 18 as well as for activating and deactivating the carbon dioxide expiration openings 19. The switching member 20 is designed as a ring 21, which also represents a rotating ring 22, because the ring 21 is mounted not only movably through a translatory motion in the direction of a longitudinal axis 28 of the first straight section 15, but also pivotably or rotatorily movably about an axis of rotation 29. The axis of rotation 29 of the rotating ring 22 corresponds to the longitudinal axis 28 of the first straight section 15 of the angular tube 30. The rotating ring 22 is formed on the outside at the first straight section 15 of the angular tube 30.

**[0036]** The elbow 1 has, furthermore, a first actuating element 23 for activating and deactivating or for opening and closing the anti-suffocation opening of the anti-suffocation valve 18. The first actuating element 23 is formed by an elastically deformable diaphragm 25. The angular tube 30 has, furthermore, an opening or a slot, through which is led a fork part 26 as a mechanism 27, and said fork part 26 is connected rigidly to the rotating ring 22.

[0037] The rotating ring 22 as a switching member 20 can be moved between three switching positions. A first switching position of the switching member 20, in which both the anti-suffocation valve 18 and the carbon dioxide expiration openings 19 are activated, is shown in Figure 2. The anti-suffocation valve 18 is activated and the carbon dioxide expiration openings 19 are deactivated or closed in a second switching position of the switching member 20, which position is shown in Figure 3. Both the anti-suffocation valve 18 and the carbon dioxide expiration openings 19 are closed or deactivated in a third switching position of the switching member 20, and this switching position is shown in Figure 4. In the second and third switching positions of the rotating ring 22, the rotating ring 22 completely closes all carbon dioxide expiration openings 19. The fork part 26 is rigidly connected to the rotating ring 22 and the fork part 26 is in contact with the diaphragm 25 in the second switching position of the switching member 20 because of the translatory motion of the rotating ring 22 in the direction of the longitudinal axis 28. The switching member 20, i.e., the rotating ring 22, also forms a second actuating element 24 for opening and closing the carbon dioxide expiration openings 19. The rotating ring 22 completely closes the carbon dioxide expiration openings 19 formed circumferentially in the second and third switching positions of the switching member 20 shown in Figures 3 and 4.

[0038] The fork part 26 is rigidly connected to the switching member 20 and the fork part 26 also performs a translatory motion in the direction of the longitudinal axis 28 of the first section 15 during a translatory motion of the switching member 20 between the three switching

positions. There is no contact between the fork part 26 and the diaphragm 25 in the first switching position of the switching member 20 according to Figure 2. There already is a contact between diaphragm 25 and fork part 26 in the second switching position of the switching member 20 shown in Figure 3, but the diaphragm 25 is still in a position in which the anti-suffocation opening is not closed. The fork part 26 also moves upward according to the view shown in Figures 3 and 4 during a further motion of the switching member 20 from the second into the third switching position, so that the diaphragm 25 closes as a result the anti-suffocation opening of the anti-suffocation valve 18.

**[0039]** Ring 21 as a rotating ring 22 is, furthermore, pivotable about the axis of rotation 29. The switching member 20 can be fixed detachably in the three switching positions at the rest of the elbow or the angular tube 30 by means of a sliding block guide, not shown separately, and/or the mechanism 27, which is shown only partially as a fork part 26. This detachable connection is established and this detachable connection is broken (deactivated) between the switching positions by pivoting the rotating ring 22 about the axis of rotation 29.

**[0040]** Considered on the whole, essential advantages are associated with the elbow 1 according to the present invention. Elbow 1 is provided with only one switching member 20 as a rotating ring 22, and both the anti-suffocation valve 18 and the carbon dioxide expiration openings 19 can be activated and deactivated by means of the only one switching member 20. As a result, the elbow 1 can be operated and handled in an especially simple and practical manner. Thus, it is not necessary to actuate separate actuating members for the anti-suffocation

valve 18 and the carbon dioxide expiration openings 19, but this can be performed with the only one switching member 20 in a simple and practical manner.

**[0041]** While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

5

## WHAT IS CLAIMED IS:

1. A patient artificial respiration mask elbow comprising:

an angular tube defining a breathing gas duct;

a tube port with an inlet opening for connecting to a breathing tube or Y-piece;

a mask port with an outlet opening for connecting to a respiration mask;

5 an anti-suffocation valve;

carbon dioxide expiration openings; and

only one switching member for activating and deactivating the anti-suffocation valve and for activating and deactivating the carbon dioxide expiration openings.

2. An elbow in accordance with claim 1, wherein the switching member comprises one of a rotating ring, a lever, a slide and a rotating wheel.

3. An elbow in accordance with claim 1, further comprising a first actuating element for activating and deactivating the anti-suffocation valve at the anti-suffocation valve and a second actuating element for activating and deactivating the carbon dioxide expiration openings at the carbon dioxide expiration openings.

4. An elbow in accordance with claim 3, wherein one of:

the first actuating element and the second actuating element each comprise a mechanical functional connection mechanism with the switching member, the first actuating element and the second actuating element moving between an activation position and a deactivation position by

5 means of the only one switching member; and  
the elbow further comprises a mechanism for mechanically connecting the switching member to the first actuating element and to the second actuating element.

5. An elbow in accordance with claim 3 wherein at least one of:  
the first actuating element comprises a flap, a roller blind or an elastically deformable diaphragm; and  
the switching member is arranged on the outside at the elbow; and  
5 one of the first actuating element and the second actuating element is arranged within the breathing gas duct, at the elbow.

6. An elbow in accordance with claim 5, wherein  
a fork part is fastened to the switching member and performs a motion of the switching member with no contact between the fork part and the flap or diaphragm in an activation position of the fork part;  
5 the fork part is in contact with the flap or diaphragm in a deactivation position of the fork part; and  
an anti-suffocation opening of the anti-suffocation valve is closed upon contact with the flap or diaphragm.

7. An elbow in accordance with claim 3, wherein at least one of:  
the second actuating element is formed as a part of the switching member; and

the second actuating element is formed by a flap, a roller blind or a diaphragm.

8. An elbow in accordance with claim 1, wherein

the switching member is mounted movably between at least three different switching positions.

9. An elbow in accordance with claim 8, wherein:

the anti-suffocation valve and the carbon dioxide expiration openings are activated in a first switching position of the at least three different switching positions of the switching member;

5       the anti-suffocation valve is activated and the carbon dioxide expiration openings are deactivated in a second switching position of the at least three different switching positions of the switching member; and

the anti-suffocation valve is deactivated and the carbon dioxide expiration openings are deactivated in a third switching position of the switching member.

10. An elbow in accordance with claim 9, wherein:

the at least three different switching positions comprises four switching positions; and

the anti-suffocation valve is deactivated and the carbon dioxide expiration openings are activated in a fourth switching position of the switching member.

11. An elbow in accordance with claim 4, wherein the switching member comprises a

ring mounted on an outside at a straight section of the angular tube, the ring being movable in a direction of a longitudinal axis of the straight section.

12. An elbow in accordance with claim 11, wherein the ring is at least one of:

a rotating ring that is rotatable about an axis of rotation which corresponds to the longitudinal axis of the straight section of the angular tube; and

5 connected movably with the angular tube by at least one of a threaded connection and a sliding block guide and the mechanism and the ring can be detachably fixed in the different switching positions via at least one of the threaded connection, the sliding block guide and the mechanism.

13. A mask system comprising:

a respiration mask; and

an elbow, the elbow comprising:

an angular tube defining a breathing gas duct;

5 a tube port with an inlet opening for connecting to a breathing tube or Y-piece;

a mask port with an outlet opening for connecting to a respiration mask;

an anti-suffocation valve;

carbon dioxide expiration opening arrangement; and

10 a single switching member for activating and deactivating of each of the anti-suffocation valve and one or more carbon dioxide expiration openings of the carbon dioxide expiration opening arrangement.



14. A mask system in accordance with claim 13, further comprising a first actuating element for activating and deactivating the anti-suffocation valve at the anti-suffocation valve and a second actuating element for activating and deactivating the carbon dioxide expiration openings at the carbon dioxide expiration openings, wherein one of:

5           the first actuating element and the second actuating element each comprise a mechanical functional connection mechanism with the switching member, the first actuating element and the second actuating element moving between an activation position and a deactivation position by means of the only one switching member; and

          the elbow further comprises a mechanism for mechanically connecting the switching  
10 member to the first actuating element and to the second actuating element.

15. A mask system in accordance with claim 13, further comprising a first actuating element for activating and deactivating the anti-suffocation valve at the anti-suffocation valve and a second actuating element for activating and deactivating the carbon dioxide expiration openings at the carbon dioxide expiration openings, wherein at least one of:

5           the second actuating element is formed as a part of the switching member; and  
          the second actuating element is formed by a flap, a roller blind or a diaphragm.

16. A mask system in accordance with claim 13, wherein  
          the switching member is mounted movably between at least three different switching  
positions;

the anti-suffocation valve and the carbon dioxide expiration openings are activated in a  
5 first switching position of the at least three different switching positions of the switching  
member;

the anti-suffocation valve is activated and the carbon dioxide expiration openings are  
deactivated in a second switching position of the at least three different switching positions of the  
switching member; and

10 the anti-suffocation valve is deactivated and the carbon dioxide expiration openings are  
deactivated in a third switching position of the switching member.

17. A respiration system comprising:

a respirator;

a breathing tube;

a respiration mask; and

5 an elbow, the elbow comprising:

an angular tube defining a breathing gas duct;

a tube port with an inlet opening for connecting to a breathing tube or Y-piece;

a mask port with an outlet opening for connecting to a respiration mask;

an anti-suffocation valve;

10 carbon dioxide expiration opening arrangement; and

a single switching member for activating and deactivating of each of the anti-suffocation  
valve and one or more carbon dioxide expiration openings of the carbon dioxide expiration  
opening arrangement.

18. A respiration system in accordance with claim 17, further comprising a first actuating element for activating and deactivating the anti-suffocation valve at the anti-suffocation valve and a second actuating element for activating and deactivating the carbon dioxide expiration openings at the carbon dioxide expiration openings, wherein one of:

5           the first actuating element and the second actuating element each comprise a mechanical functional connection mechanism with the switching member, the first actuating element and the second actuating element moving between an activation position and a deactivation position by means of the only one switching member; and

          the elbow further comprises a mechanism for mechanically connecting the switching  
10 member to the first actuating element and to the second actuating element.

19. A respiration system in accordance with claim 17, further comprising a first actuating element for activating and deactivating the anti-suffocation valve at the anti-suffocation valve and a second actuating element for activating and deactivating the carbon dioxide expiration openings at the carbon dioxide expiration openings, wherein at least one of:

5           the second actuating element is formed as a part of the switching member; and  
          the second actuating element is formed by a flap, a roller blind or a diaphragm.

20. A respiration system in accordance with claim 17, wherein  
          the switching member is mounted movably between at least three different switching  
positions;

10           the anti-suffocation valve and the carbon dioxide expiration openings are activated in a first switching position of the at least three different switching positions of the switching member;

          the anti-suffocation valve is activated and the carbon dioxide expiration openings are deactivated in a second switching position of the at least three different switching positions of the  
15 switching member; and

          the anti-suffocation valve is deactivated and the carbon dioxide expiration openings are deactivated in a third switching position of the switching member.

## ABSTRACT OF THE DISCLOSURE

An elbow (1), for a respiration mask for the artificial respiration of a patient, includes an angular tube (30), which defines a breathing gas duct (10), with a tube port (11) with an inlet opening (12) for connecting a breathing tube (7) and with a mask port (13) with an outlet opening (14) for connecting the respiration mask (9). The elbow also includes an anti-suffocation valve (18) and carbon dioxide expiration openings (19). The elbow (1) is able to be switched, while being able to be handled in a simple manner, in different open and closed states for the anti-suffocation valve (18) and the carbon dioxide expiration openings (19). The elbow (1) includes only one (a single) switching member (20) for activating and deactivating the anti-suffocation valve (18) and the carbon dioxide expiration openings (19).

**LIST OF REFERENCE NUMBERS**

1 Elbow  
2 Respirator  
3 Respiration system  
4 Mask system  
5 Inspiration tube  
6 Expiration tube  
7 Breathing tube  
8 Y-piece  
9 Respiration mask  
10 Breathing gas duct  
11 Tube port  
12 Inlet opening  
13 Mask port  
14 Outlet opening  
15 First straight section with inlet  
opening  
16 Second straight section with outlet  
opening  
17 Bend  
18 Anti-suffocation valve  
19 Carbon dioxide expiration openings

20 Switching member  
21 Ring  
22 Rotating ring  
23 First actuating element  
24 Second actuating element  
25 Diaphragm  
26 Fork part  
27 Mechanism  
28 Longitudinal axis  
29 Axis of rotation  
30 Angular tube