

Further features and advantages of the present invention will be seen by the following detailed description, taking in conjunction with the accompanying drawings, wherein:

Fig. 1 is a side elevational view showing a lateral positioning device in accordance with one embodiment of the present invention and illustrates a patient lying on his or her side (lateral decubitus position) in order to displace weight off his or her chest to assist in ventilation; and

Fig. 2 is the lateral device with x,y, and z views in the lateral decubitus position.

Figs. 3A and 3B diagrammatically illustrate the apparatus and method for positioning a patient in accordance with the present invention for the supine position.

Figs. 3A-3C are front and rear perspective views and side elevational views of yet another embodiment, the supine positioning device in accordance with the present invention;

Figs. 4A and 4B are top perspective and side elevational views of the current embodiment shown in a lowered position;

Figs. 5 and 6 is a side elevational view of the Fig. 4A-4B positioning device retrofitted to existing operating tables in the raised and lowered positions respectively;

Figs. 7A and 7B are views similar to Fig. 6, of an alternative embodiment of the invention showing the head and neck independent supports mounted on the lift support;

Fig. 8 shows a traditional patient mask strap in accordance with the prior art;

Figs. 9A and 9B show a mask strap in accordance with an embodiment of the present invention;

Figs. 10-12 show another embodiment of mask strap in accordance with the present invention;

Fig. 13 shows a head restraint in accordance with the present invention;

Figs. 14A-14C show a mask anchor ring in accordance with the present invention;

Fig. 14D shows a ring part of the mask and how the posterior straps attach;

Fig. 14D shows a ring part of the mask and how posterior straps will attach;

Figs. 15A-15C illustrate use of a mask anchor ring in accordance with the present invention, and Fig. 15D illustrates a mask in which the mask anchor ring or mask anchor straps are built into the mask;

Figs. 15E and 15F are top and bottom plan views of yet another aspect of mask in accordance with the present invention;

1 Claims:

2 1. ~~— A device for positioning a patient, comprising:~~
3 ~~— a base; a ramp subassembly pivotally mounted at a proximal end to the base for~~
4 ~~supporting the upper back, middle back, and shoulders of the patient, said ramp~~
5 ~~subassembly being adjustable in length and angle relative to the base;~~
6 ~~— a head support subassembly pivotally mounted to a distal end of the ramp~~
7 ~~subassembly, said head support subassembly being adjustable in angle relative to the~~
8 ~~ramp substantially; and~~
9 ~~— a pneumatic or mechanical jack, or an expandable bellows, supported on the head~~
10 ~~support subassembly for independently raising the patient's head relative to the head~~
11 ~~support subassembly.~~

12 2. ~~— A method for positioning a patient to facilitate maintenance of a patent~~
13 ~~airway under anesthesia, comprising:~~
14 ~~— providing a device as claimed in claim 1;~~
15 ~~— positioning the patient on the device;~~
16 ~~— adjusting the ramp subassembly to support the patient in a desired inclined~~
17 ~~position;~~
18 ~~— adjusting the head subassembly to support the patient's head and neck in a~~
19 ~~generally desired sniffing position; and~~
20 ~~— activating the pneumatic or mechanical jack, or inflating the expandable bellows~~
21 ~~to raise the patient's head relative to the second surface to a desired sniffing position.~~

22 3. ~~— A first measuring device for use with the device of claim 1, comprising~~
23 ~~two sides:~~

24 ~~— a first rigid semi-cylindrical side with four arm extensions, each of which is~~
25 ~~located within each of the four corners, and each of which comes into contact with the~~
26 ~~patient's neck;~~

27 ~~— a second rigid side consists of a 35° incline, of which rests a measuring device~~
28 ~~used to confirm the neck flexion angle of 35° to achieve the desired position.~~

29 4. ~~— A second measuring device for use with the device of claim 1, comprising~~
30 ~~two sides:~~

31 ~~— a first rigid triangular side with three arm extensions, each of which is located~~
32 ~~within each of the three corners, and each of which comes in contact with the patient's~~
33 ~~head; the arm extensions are each adjustable along the z-axis to achieve the desired~~
34 ~~position;~~

1 ——— a second rigid side consists of a 15° incline, of which rests a measuring device
2 used to confirm the head extension angle of 15° to achieve the desired position.

3 5. ——— A method for positioning a patient comprising the steps of:

4 ——— providing the device of claim 1;

5 ——— placing the patient's head, neck, upper and middle back, and shoulders
6 substantially on the base; using an adjustable device to place the patient's head, neck,
7 upper and middle back, and shoulders in a desired position; using a measuring device to
8 confirm the desired position; moving the first mandible arm to contact the patient's jaw;
9 moving the second mandible arm to contact the patient's jaw; wherein the contact of the
10 first mandible arm and the second mandible arm provides sufficient force to substantially
11 maintain the patient's head and/or jaw in a desired position.

12 6. ——— The method of claim 5, characterized by one or more of the following
13 features:

14 ——— (a) ——— wherein all three axes (oropharyngeal, laryngeal, tracheal) are aligned for
15 the recommended view for intubation;

16 ——— (b) ——— wherein the patient's head height is adjusted with respect to the Z axis by
17 using a jack;

18 ——— (c) ——— wherein the device includes a squeeze released jaw thrust grip, and
19 including the step of moving the jaw thrust grip in the z direction;

20 ——— (d) ——— including a neck interface and a head interface which are independently
21 adjustable in one or more of the x, y and z positions, and

22 ——— (e) ——— wherein the detachable third incline side is rotatably adjustable about each
23 y axis.

24 7. ——— A device for positioning a patient in a sniff position, comprising an
25 adjustable ramp and headrest, wherein as ramp incline is varied, head rest orientation
26 remains parallel, substantially horizontal to the operating table, by changing the head rest
27 angle, θ_x by an opposite amount.

28 8. ——— The device of claim 7, characterized by one or more of the following
29 features:

30 ——— (a) ——— wherein adjustment of angles is accomplished by open loop processing
31 based on known or estimated geometries of all known parameters;

32 ——— (b) ——— wherein adjustment of angles is accomplished by closed loop processing
33 where a current angle is measured relative to an initial angle, and driven back to said
34 initial angle;

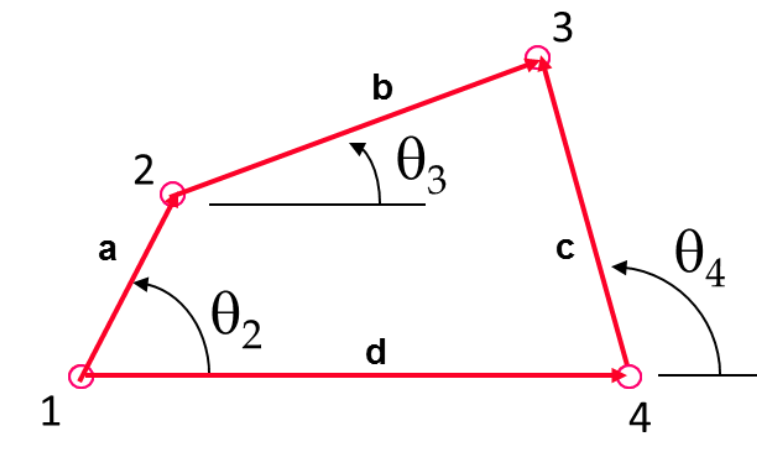
(c) wherein adjustment is accomplished upon multiple feedback sensors including but not limited to:

- (i) Measurement of angle relative to gravity with an inclinometer; and
- (ii) Encoders.

(d) wherein as ramp incline is varied, and / or head rest angle, θ are changed to position the patient, ramp linkage length is varied in order to satisfy the conditions that positions of linkages fixed relative to their respective support surfaces;

(e) wherein adjusting of angles is accomplished by:

- (i) Open loop processing based on known or estimated geometries of all parameters, or by
- (ii) Closed loop processing where the relative positions of one or more linkage termination points are measured and the length d is adjusted under closed loop control driven by sensor feedback to return the measured parameter to their original position with regard to the following geometry, or by



- (a) Point 2 of linkage a's position relative to point 1;
- (b) Point 3 of linkage c's position relative to point 4;
- (c) Alternate Point 3 where the patient head meets the head rest; and
- (d) feedback sensors monitoring relative position of the points that define the linkage length including position measurement sensors selected from the group consisting of: hall effect sensors; magneto-resistive sensors; optical sensors, including encoders, interferometers and/or positional sensing detectors; and stress / strain / force / torque monitoring sensors located at the point interfaces that minimize those parameters by adjusting linkage length d under closed loop control.

9. A disposable anesthesia nasal and oral mask which can be used either

1 separately as a nasal mask or a oral mask or can be attached together and can be used as
2 a combination nasal-oral mask, which can also be used to sealingly connect a mask to a
3 wearer's face; two cushions comprising: a first nasal inflatable or non-inflatable cushion
4 that consists of a nasal bridge region, a cheek region, and an upper lip region and a
5 second mouth inflatable or non-inflatable cushion which consists of a lower lip region, a
6 cheek region, and an upper lip region; a first nasal membrane comprising a substantially
7 triangularly shaped frame of resilient material having a first molded inwardly curved rim
8 of said first nasal membrane; a second nasal membrane of resilient material, said second
9 nasal membrane being thinner, as thin, or thicker than said first nasal membrane, said
10 second nasal membrane having a second molded inwardly curved rim, said second nasal
11 membrane curved rim spaced a first distance from said first nasal membrane curved rim
12 in said cheek region and said second nasal membrane curved rim spaced a second
13 distance from said first nasal membrane curved rim in said nasal bridge region, said
14 second distance greater than said first distance, said distances measured when the mask
15 is not in use, a portion of said second membrane curved rim forming a face contacting
16 seal; a first mouth membrane comprising a substantially oval shaped frame of resilient
17 material having a first molded inwardly curved rim of said first mouth membrane; a
18 second mouth membrane of resilient material, said second mouth membrane being
19 thinner, as thin, or thicker than said first mouth membrane, said second mouth membrane
20 having a second molded inwardly curved rim, said second mouth membrane curved rim
21 spaced a first distance from said first mouth membrane curved rim in said cheek region
22 and said second mouth membrane curved rim spaced a second distance from said first
23 mouth membrane curved rim in said mouth region, said second distance greater than said
24 first distance, said distances measured when the mask is not in use, a portion of said
25 second membrane curved rim forming a face contacting seal; an attachment with two
26 apertures; where the first aperture is fixed to the oral mask and can connect to the second
27 aperture, which is fixed to the nasal mask; where when they are connected together it
28 comprises an anesthesia full face mask, covering and sealing around the mouth and nose;
29 yet either the mouth mask or the nasal mask can detach so that the mask can be used for
30 nasal non-invasive positive pressure ventilation (CPAP/BiPAP) alone or oral non-
31 invasive positive pressure ventilation (CPAP/BiPAP) alone.

32 10. — A nasal and oral mask as claimed in claim 9, characterized by one or more
33 of the following features:

34 — (a) — wherein said second molded rim and said first molded rim have a co-

1 ~~located notch to accommodate the bridge of a wearer's nose;~~

2 ~~—— (b) —— wherein said first nasal membrane molded rim and said second nasal~~
3 ~~membrane molded rim are substantially saddle-shaped;~~

4 ~~—— (c) —— wherein said second nasal membrane is shaped so that said seal portion, in~~
5 ~~use, contacts at least a wearer's nose;~~

6 ~~—— (d) —— wherein said seal portion, in use, contacts the facial tissue around the~~
7 ~~sides and over the bridge of the nose, and between the base of the nose and the top lip;~~

8 ~~—— (e) —— wherein said second rim and seal portion are shaped to generally match~~
9 ~~facial contours in the region of facial tissue around the sides and over the bridge of the~~
10 ~~nose, and between the base of the nose and the upper lip;~~

11 ~~—— (f) —— wherein the first and second nasal membranes comprise one molded~~
12 ~~piece, without being adhered together by an adhesive.~~

13 ~~—— (g) —— wherein the first molded inwardly curved rim of said first nasal membrane~~
14 ~~is as thick, less thick, or thicker than the second nasal membrane;~~

15 ~~—— (h) —— wherein the second molded inwardly curved rim of the second nasal~~
16 ~~membrane is as thick, less thick, or thicker than the first nasal membrane;~~

17 ~~—— (i) —— wherein said second molded rim and said first molded rim have a co-~~
18 ~~located notch to accommodate the lips a wearer's mouth;~~

19 ~~—— (j) —— wherein said first mouth membrane molded rim and said second mouth~~
20 ~~membrane molded rim are substantially oval shaped;~~

21 ~~—— (k) —— wherein said second mouth membrane is shaped so that said seal portion,~~
22 ~~in use, contacts at least a wearer's upper and lower lip;~~

23 ~~—— (l) —— wherein said seal portion, in use, contacts the facial tissue around the~~
24 ~~sides and over the upper and lower lips of the mouth;~~

25 ~~—— (m) —— wherein said second rim and seal portion are shaped to generally match~~
26 ~~facial contours in the region of facial tissue around the sides and over the upper and~~
27 ~~lower lip of the mouth;~~

28 ~~—— (n) —— wherein the first and second mouth membranes comprise one molded~~
29 ~~piece, without being adhered together by an adhesive;~~

30 ~~—— (o) —— wherein the first molded inwardly curved rim of said first mouth~~
31 ~~membrane is as thick, less thick, or thicker than the second mouth membrane, and~~

32 ~~—— (p) —— wherein the second molded inwardly curved rim of the second mouth~~
33 ~~membrane is as thick, less thick, or thicker than the first mouth membrane.~~

34 11. — A nasal mask, oral mask or full face mask, for connection to a wearer's

face comprising: a mask body for connection with a supply of breathable gas, whether oxygen, air, anesthetic gases or any other gas; and a nasal inflatable or non-inflatable cushion secured to said mask body, the body and cushion forming a nose-receiving cavity, said cushion including: a nasal bridge region, a cheek region and an upper lip region; a substantially triangularly shaped first nasal membrane of resilient material having a first molded inwardly curved rim to surround wearer's nose; a second nasal membrane also of resilient material, said second membrane being relatively more flexible than said first nasal membrane, said second nasal membrane having a second molded inwardly curved rim, said second molded rim being of the same general shape as said first molded rim and fixed to and extending away from said first nasal membrane so as to have a second nasal membrane inner surface spaced a first distance from an outer surface of said first molded rim in said cheek region and said second membrane inner surface spaced a second distance from said first nasal membrane outer surface of said first molded rim in said nasal bridge region, said second distance greater than said first distance, said distances measured when the mask is not in use, a portion of said second molded rim forming a face-contacting seal; and wherein said seal portion is substantially coterminous with respect to said second molded rim and is resiliently deformable towards said first nasal membrane in use of said mask.

12. — A nasal mask, oral mask, or full face mask, covering and sealing the mouth and nose, as claimed in claim 11, characterized by one or more of the following features:

— (a) — wherein said a nasal mask, oral mask, or full face mask body includes either integrated head strap attachment points using either an anterior approach or posterior approach or it can have separated head strap attachment points using either an anterior approach or a posterior approach that placed over the nasal mask, oral mask, or full face mask body, which attach to a surface that can secure the nasal mask, oral mask, or full face mask to the wearer's face to ensure a tight seal and to maintain the wearer's head and neck in the desired position to maintain airway patency;

— (b) — further comprising securing straps fixed to said attachment points which can secure the wearer's head to a surface and maintain the wearer's head and neck in the desired position;

— (c) — wherein said second membrane molded rim and said first nasal membrane molded rim each have a co-located notch to accommodate the bridge of a nose;

— (d) — wherein said first and second molded rims are substantially saddle-

1 shaped;

2 ~~—— (e) —— wherein said second nasal membrane is shaped so that said seal portion, in~~
3 ~~use, contacts at least wearer's nose;~~

4 ~~—— (f) —— wherein said seal portion, in use, contacts the facial tissue around the~~
5 ~~sides and over the bridge of the nose, and between the base of the nose and the upper lip,~~
6 ~~and~~

7 ~~—— (g) —— wherein said rim and said seal portion are shaped to generally match~~
8 ~~facial contours in the region of facial tissue around the sides and over the bridge of the~~
9 ~~nose, and between the base of the nose and the upper lip.~~

10 ~~—— 13. —— A nasal noninvasive positive pressure ventilating (CPAP/BiPAP), oral~~
11 ~~noninvasive positive pressure ventilating (CPAP/BiPAP), or full face mask noninvasive~~
12 ~~positive pressure ventilating (CPAP/BiPAP) treatment apparatus comprising: a~~
13 ~~generator for the supply of gas at a pressure below, equal to, or elevated above~~
14 ~~atmospheric pressure; a gas delivery conduit coupled to said generator; and a nasal mask~~
15 ~~oral mask, full face mask in turn coupled to said conduit to said nasal mask, oral mask,~~
16 ~~full face mask including: a mask body for connection with a supply of breathable gas;~~
17 ~~and a nasal inflatable or non-inflatable cushion secured to said mask body, the body and~~
18 ~~cushion forming a nose-receiving cavity, the cushion including: a nasal bridge region, a~~
19 ~~cheek region and a lip region; a substantially triangularly-shaped first nasal membrane of~~
20 ~~resilient material having a first nasal membrane having a molded inwardly curved rim; a~~
21 ~~second membrane having a second molded inwardly curved rim also of resilient material,~~
22 ~~said second nasal membrane being relatively more flexible than said first membrane, and~~
23 ~~being of the same general shape as said first molded inwardly curved rim and fixed to~~
24 ~~and extending away from said first nasal membrane so as to have an inner surface spaced~~
25 ~~a first distance from said first molded rim in said cheek region and said second nasal~~
26 ~~membrane inner surface spaced a second distance from said first molded rim, said~~
27 ~~second distance greater than said first distance, said distances measured when the mask~~
28 ~~is not in use, a portion of said second molded rim forming a face contacting seal; and~~
29 ~~Wherein said seal portion is generally coterminous with respect to said second molded~~
30 ~~rim and is resiliently deformable towards said first membrane in use of said mask.~~

31 ~~14 —— The non-invasive positive pressure ventilation (BiPAP/CPAP) treatment~~
32 ~~apparatus as claimed in claim 13, characterized by one or more of the following features:~~

33 ~~—— (a) —— wherein said mask body includes attachment points which can secure the~~
34 ~~wearer's head to a surface and maintain the wearer's head and neck in position;~~

1 ——— (b) ——— further comprising securing straps fixed to said attachment points which
2 can secure the wearer's head to a surface and maintain the wearer's head and neck in
3 position;

4 ——— (c) ——— wherein said first and second molded rims each have a co-located notch to
5 accommodate the bridge of a nose;

6 ——— (d) ——— wherein said first and second molded rims are substantially saddle-
7 shaped;

8 ——— (e) ——— wherein said second nasal membrane is shaped so that said seal portion, in
9 use, contacts at least wearer's nose;

10 ——— (f) ——— wherein said seal portion, in use, contacts the facial tissue around the
11 sides and over the bridge of the nose, and facial tissue around the sides and over the
12 bridge of the nose, between the base of the nose and the upper lip and between the base
13 of the nose and the upper lip, and

14 ——— (g) ——— wherein said second molded rim and said seal portion are shaped to
15 generally match facial contours in the region of facial tissue around the sides and over
16 the bridge of the nose, between the base of the nose and the upper lip and between the
17 base of the nose and the upper lip.

18 15. ——— An oral mask for connection to a wearer's face comprising: a mask body
19 for connection with a supply of breathable gas; and an inflatable or non-inflatable mouth
20 cushion secured to said mask body, the body and cushion forming a mouth-receiving
21 cavity, said cushion including: a mouth region, a cheek region and an upper and lower lip
22 region; a substantially oval-shaped first mouth membrane of resilient material having a
23 first molded inwardly curved rim to surround a wearer's nose; a second mouth
24 membrane also of resilient material, said second mouth membrane being relatively more
25 flexible than said first mouth membrane, said second mouth membrane having a second
26 molded inwardly curved rim, said second molded rim being of the same general shape as
27 said first molded rim and fixed to and extending away from said first mouth membrane
28 so as to have a second mouth membrane inner surface spaced a first distance from an
29 outer surface of said first molded rim in said cheek region and said second mouth membrane
30 inner surface spaced a second distance from said first mouth membrane outer surface of said first
31 molded rim in said mouth region, said second distance greater than said first distance, said
32 distances measured when the mask is not in use, a portion of said second molded rim forming a
33 face-contacting seal; and wherein said seal portion is substantially coterminous with respect
34 to said second molded rim and is resiliently deformable

1 ~~towards said first mouth membrane in use of said mask.~~

2 ~~16. The mask as claimed in claim 15, characterized by one or more of the~~
3 ~~following features:~~

4 ~~(a) wherein said mask body includes attachment points which can secure the~~
5 ~~wearer's head to a surface and maintain the wearer's head and neck in position;~~

6 ~~(b) further comprising securing straps fixed to said attachment points which~~
7 ~~can secure the wearer's head to a surface and maintain the wearer's head and neck in~~
8 ~~position;~~

9 ~~(c) wherein said second membrane molded rim and said first mouth~~
10 ~~membrane molded rim each have a co-located notch to accommodate the mouth;~~

11 ~~(d) wherein said first and second molded rims are substantially oval-shaped;~~

12 ~~(e) wherein said second mouth membrane is shaped so that said seal portion,~~
13 ~~in use, contacts at least wearer's mouth;~~

14 ~~(f) wherein said seal portion, in use, contacts the facial tissue around the~~
15 ~~sides and over the mouth, and between the upper and lower lip;~~

16 ~~(g) wherein said rim and said seal portion are shaped to generally match~~
17 ~~facial contours in the region of facial tissue around the sides and the mouth, and between~~
18 ~~the upper and lower lip.~~

19 ~~17. The nasal mask, oral mask, or full facemask as claimed in claim 11,~~
20 ~~further patent tubing which has two ends to be used as an gas source to transport patients,~~
21 ~~where a distal end of the tubing is connected to either a stand alone or a portable~~
22 ~~generator for the supply of gas at a pressure below, equal to, or elevated above~~
23 ~~atmospheric pressure; a gas delivery conduit coupled to said generator a portable gas~~
24 ~~supply and a proximal end is connected to an adaptor, which contains an End-Tidal CO2~~
25 ~~port, a nebulizer port, a PEEP valve port, expiratory port and/or valve, pressure relief~~
26 ~~valve, which has an aperture which attaches to either the nasal mask, the oral mask, or~~
27 ~~the full face mask.~~

28 ~~18. The nasal mask, oral mask or full face mask, as claimed in claim 11,~~
29 ~~connected to a generator for the supply of gas, where the amount and concentration of~~
30 ~~gas delivered is controlled by the supply source as well as the expiratory port, and/or~~
31 ~~used as a scavenger system by connecting the nasal mask and the oral mask~~
32 ~~simultaneously, where the nasal mask can be used to deliver positive pressure and the~~
33 ~~oral mask can be connected to a suctioning device to properly store and/or dispose gases.~~

34 ~~19. The nasal mask, oral mask or full face mask as claimed in claim 11,~~

1 contoured around the patient's nasal bridge, nose, and upper lip such that it and the
2 generator gas supply it is connected to does not interfere with the operator's access to the
3 mouth/oral cavity, lips, cheeks, chin, jaw, and neck, and/or connected to a resuscitator
4 bag with or without a gas supply attached to the resuscitator bag.

5 ——— 20. ——— An operating table having a positioning device as claimed in claim 1, and
6 one or more pads having a thickness approximating that of the positioning device, on the
7 operating table.

8 ——— 21. ——— The operating table in claim 20, wherein at least one of the pads is slatted
9 or pleated to facilitate bending.

10 ——— 22. ——— The operating table of claim 20, further including the base spacer having a
11 plurality of rollers located under a main pad.

12 23. ——— A flexible and soft head restraining device for a patient, comprising:
13 ——— a first proximal end that attaches to one side of the first side of the base; which
14 can then extend horizontally and come in contact with the patient's head and attach to the
15 opposite side of the first surface of the base; the device is adjustable and able to secure
16 the patient's head to the first surface of the base to prevent the patient from disengaging
17 from the desired position.

18 24. ——— A mandible arm for use in positioning a patient, comprising:
19 ——— two rigid lockable arms, wherein the upper arm has a curved extension which is
20 rotatable in the z-axis and the lower arm does not provide an extension;
21 ——— a curved portion, wherein the curved portion is substantially rigid;
22 ——— a mandible pad, wherein the mandible pad is flexible and pivotable, and wherein
23 the mandible pad has a proximal side configured to attach to the curved portion and a
24 distal side configured to contact a patient's jaw at a at least two of a ramus, a body, and
25 an angle of the patient's jaw; and
26 ——— a connector portion, wherein the connector portion is configured to extend from
27 and attach to a rotatable portion of a support, and wherein the connector portion is
28 further configured to attach to a support that is attached to a base comprising a left side
29 and a right side, wherein the base is configured to substantially accommodate a patient's
30 head, neck, upper and middle back, and shoulders, and wherein the support is movable in
31 two axes such that the mandible pad is positionable to be in contact with a patient's jaw
32 at one or more points and to maintain a patient in a desired position.

33 25. ——— A flexible and soft head restraining and anesthesia mask sealing device
34 for positioning a patient, comprising:

1 ——— a first proximal end that attaches to one side of the first side of a base of a
2 carriage subassembly, which can then extend horizontally and come in contact with
3 either the patient's head and attach to the opposite side of the first surface of the base or
4 comes in contact with the anesthesia mask, which then contacts and seals to the patient's
5 face; wherein the device is adjustable and able to secure the patient's head to the first
6 surface of the base to prevent the patient from disengaging from the desired position,
7 wherein the carriage subassembly optionally is reversible, allowing the patient to be
8 placed on an opposite side, and/or wherein the device optionally is formed of MRI or
9 Xray compatible materials.

10 26. ——— A flexible and soft back restraining device for positioning a patient,
11 comprising:

12 ——— a first proximal end that attaches to one side of the back board, which can then
13 extend horizontally and come in contact with the patient's abdomen and attach to the
14 opposite side of the back board, wherein the device is adjustable and able to secure the
15 patient's back to the surface of the back board to prevent the patient from disengaging
16 from the desired position.

17 27. ——— A surface for supporting a patient, comprising:

18 ——— a first side that is adjustable to be in contact the patient's back, and a second
19 adjustable side that is adjustable to be in contact with the patient's ribs to prevent patient
20 movement.

21 28. ——— An apparatus for use when providing anesthesia to a patient, comprising,
22 — a base having a first side, a second side, a third side, and an adjustable support
23 structure, wherein the base is configured to substantially accommodate a patient's neck
24 and head;

25 — wherein a distal end of the base first side comprises either a semi-cylindrical
26 support, adjustable in the z-axis, which assists in maintaining the desired sniffing
27 position or a flat surface also adjustable in the z axis;

28 a proximal end of the base first side comprises either a slightly inclined or flat
29 surface, with or without a cut-out center and is adjustable in the z-axis in order to
30 provide head support to further optimize the sniffing position;

31 the second and third sides of the base each contain a plurality of protrusions; and

32 — an anesthesia mask strap with four sides, wherein the first and second sides
33 include an aperture that is placed over an aperture of the mask, and the third and fourth

sides include a narrow extension which include a plurality of holes adapted to attach to one of the four protrusions on sides two and thereof the base;

~~wherein the mask strap is adapted to hold an anesthesia mask strap against the patient's nose, cheeks, mouth and/or head to maintain the desired sniffing position where the patient's jaw is moved up and forward, thereby unobstructing the patient's airway; and wherein the mask strap is adapted stabilize the patient's head and neck to the base preventing movement of the patient's head and neck.~~

29. — The apparatus according to claim 28, characterized by one or more of the following features:

(a) — ~~wherein the anesthesia mask strap is formed of a non-static latex free material;~~

(b) — ~~wherein at least some of said narrow extensions have respective portions of snap fasteners for attaching the narrow extension to one of the protrusions of the base;~~

(c) — ~~wherein the adjustable support is located in the interior of the base;~~

(d) — ~~wherein the adjustable support includes a mechanical or a pneumatic adjustment mechanism;~~

(e) — ~~wherein the base is substantially rectangular in plan;~~

(f) — ~~wherein the desired position is the sniffing position, aligning all three axes, oropharyngeal, laryngeal, and tracheal;~~

(g) — ~~wherein the base further comprises a distal adjustable neck rest disposed on the first surface configured to provide optimal flexion of the patient's neck and a proximal inclined head rest to provide optimal head extension to acquire the desired position; or the base comprises only a flat surface if the desired positioned is not necessary;~~

(h) — ~~wherein the apparatus is formed of MRI or Xray compatible materials; and~~

(i) — ~~wherein the mask strap is formed of a material that is easily disinfected with anti-microbial solutions or is disposable.~~

30. — An apparatus for use when providing anesthesia to a patient, comprising: means for providing said anesthesia to said patient; mask strap means for holding said mask means against a patient's nose, mouth, cheeks, and or head; a base of which the mask strap attaches to achieve the desired position which raises the patient's jaw up and forward so as to unobstruct the patient's airway.

31. — A method for positioning a patient for administering anesthesia, comprising the steps of: providing the device of claim 28; placing the patient's head and neck substantially on the carriage subassembly; using an adjustable device to place the patient's head and neck in a desired position; placing the mask strap either over the aperture of the anesthesia mask or the patient's head to substantially maintain the patient's head and/or jaw in a desired position.

32. — The method of claim 31, characterized by one or more of the following features:

(a) — wherein placing the head and neck substantially on the neck rest on the distal end of the first surface of the base and the head rest on the proximal end of the first side of the base places the patient in the desired position without eliciting pain;

(b) — wherein placing the head and neck substantially on the neck rest on the distal end of the first surface of the base and the head rest on the proximal end of the first side of the base places the patient in the desired position and restricts the movement of the patient's head and neck; and

(c) — wherein placing the mask on the patient's face, then placing the mask strap over the mask and attaching it to the base will prevent leakage of anesthetic gases and oxygen into the air.

33. — An apparatus for providing ventilation to a patient lying supine on a support, comprising,

—— a ventilation mask,

—— a mask anchor ring over the ventilation mask, and

—— a plurality of elastomeric cords connecting the mask anchor to the support.

34. — The apparatus according to claim 33, wherein the elastomeric straps are fixed to the mask anchor ring spaced 180° around an imaginary circle.

35. — A device for positioning a patient, comprising:

—— a carriage having a first surface that supports the patients in an inclined position, and is adjustable in the Z-axis, a second surface that supports the patient's head and neck and is adjustable to place the patient in a generally desired sniffing position; and

—— a pneumatic or mechanical jack, or an expandable bellows, supported on the second surface for independently raising the patient's head relative to the second surface.

36. — The device of claim 35, characterized by one or more of the following features:

1 ——— (a) ——— wherein the expandable bellows comprises a plurality of rigid concentric
2 rings joined by flexible membranes on a rigid base, wherein the third side of the base
3 preferably comprises:

4 ——— a rigid inclined side with two ends;

5 ——— a proximal end which is detachable from the distal side of the first side of the
6 best; the desired position can be obtained by different body habitus' by adjusting the
7 height of the first base;

8 ——— a distal end comprises an extension mechanism to maintain the desired angle to
9 maintain the patient in the desired position;

10 ——— a resiliently deformable pad that lies on top of the rigid inclined side and comes
11 in contact with the patient's upper back, middle back, and shoulders;

12 ——— (b) ——— wherein the bellows includes a two-way valve through which air may be
13 added or subtracted; and

14 ——— (c) ——— wherein the bellows is formed of MRI or Xray compatible material.

15 37. ——— A method for positioning a patient to facilitate maintenance of a patient
16 airway under anesthesia, comprising providing a device as claimed in claim 35,
17 positioning the patient on the device, adjusting the first surface to support the patient in a
18 desired inclined position;

19 ——— adjusting the second surface to support the patient's head and neck in a generally
20 desired sniffing position; and

21 ——— activating the pneumatic or mechanical jack, or inflating the expandable bellows
22 to raise the patient's head relative to the second surface to a desired sniffing position.

23 38. ——— A device for positioning a patient, comprising:

24 ——— a base comprising a first side which supports the patients head and neck, a second
25 side acting as the foundation, an inner vertically adjustable support structure between the
26 first and second sides, and a detachable third inclined side which support the upper back,
27 middle back, and shoulders of patient;

28 ——— a first support positioned on the second side of the base and lockably adjustable
29 with respect to the second side of the base in an x and y axes;

30 ——— a second support positioned on the second side of the base and lockably
31 adjustable with respect to the second side of the base in the x and y axes;

32 ——— a first mandible arm extending from a first vertically adjusted portion of the first
33 support, wherein the first vertically adjusted portion is lockable in a z axis to lockably

1 adjust the first mandible arm with respect to the z axis, and wherein the first mandible
2 arm is positionable to be in contact with the patient's jaw; and
3 ——— a second mandible arm extending from a second vertically adjusted portion of the
4 second support, wherein the second vertically adjusted portion is lockable in the z axis to
5 adjust the second mandible arm with respect to the z axis, and wherein the second
6 mandible arm is positionable to be in contact with the patient's jaw;
7 ——— wherein the first mandible arm and the second mandible arm are movable such
8 that each is positionable to be in contact with the patient's jaw and to maintain the patient
9 in a desired position and leaving the provider hands free.

10 39. ——— The device of claim 38, characterized by one or more of the following
11 features:

12 ——— (a) ——— wherein the mandible arm is positionable to be in contact with the
13 patient's jaw at a ramus, a body, or an angle of the patient's jaw, wherein each of the first
14 mandible arm and the second mandible arm preferably is positionable such that the
15 mandible pad, preferably formed of foam, is in contact with the patient's jaw at two or
16 more of a ramus, a body, or an angle of the patient's jaw, or wherein each of the first
17 mandible arm and the second mandible arm preferably is positionable such that the
18 mandible pad is in contact with a patient's jaw at a ramus, a body, and an angle of the
19 patient's jaw;

20 ——— (b) ——— wherein the first support is movable relative to the base and the second
21 support is movable relative to the base, wherein the first support preferable is movable
22 relative to the base in two axes and the second support is movable relative to the base in
23 two axes;

24 ——— (c) ——— wherein the base is rectangular;

25 ——— (d) ——— wherein the first mandible arm and the second mandible arm each
26 comprise a mandible pad;

27 ——— (e) ——— wherein the first mandible arm and the second mandible arm are
28 removably connected to the first support and the second support, respectively;

29 ——— (f) ——— wherein the first mandible arm is movable relative to the first support and
30 the second mandible arm is movable relative to the second support;

31 ——— (g) ——— wherein the desired position is the sniffing position, aligning all 3 axes
32 (oropharyngeal, laryngeal, and tracheal), and/or the jaw thrust maneuver;

33 ——— (h) ——— further including a level for determining a patient's neck flexion angle;

1 ——— (i) ——— wherein the base further comprises a distal neck rest disposed on the first
2 surface configured to provide optimal flexion of the patient's neck and a proximal
3 inclined head rest to provide optimal head extension to a acquire the desired position;

4 ——— (j) ——— wherein the first and second mandible arms are configured to extend the
5 patient's jaw when rotated in the z-axis;

6 ——— (k) ——— wherein the plurality of mandible arms are configured to extend the
7 patient's jaw when rotated in the z-axis;

8 ——— (l) ——— wherein the first and second supports and first and second rotatable
9 portions are adjustable while the patient is in contact with the first and second mandible
10 arms; and

11 ——— (m) ——— wherein the third side of the base will support a patient's upper back,
12 middle back, and shoulders, whereby to enable gravity to displace weight off of the
13 patient's chest, including in obese patients;

14 ——— (n) ——— wherein the device is formed of MRI or Xray compatible materials;

15 ——— (o) ——— wherein placing the head and neck substantially on the neck rest on the
16 distal end of the first surface of the base and the head rest on the proximal end of the first
17 side of the base places the patient in the desired position within eliciting pain; and

18 ——— (p) ——— wherein the inner adjustable surface consists of a rigid structure; wherein
19 the device is adjustable along a y-axis to displace weight off of a patient's chest; is
20 adjustable along a y-axis to align the ear and the sternum horizontally to achieve
21 maximal air exchange in obese patients; and is adjustable along a z-axis for elevating and
22 lowering obese patients without the help of health care workers;

23 ——— (q) ——— further comprising a claw for providing an anesthesiologist a tactile
24 interface with the patient in terms of extending the jaw, wherein the position of left and
25 right arms of the claw are maintained by frictional force that is transmitted through the
26 jack assembly, which force may be overcome by the anesthesiologist when rotating the
27 arms about the Z axis, further optionally characterized by one or more of the following
28 features:

29 ——— (i) ——— wherein the position of the left and right arms of the claw are
30 secured by friction about the Y axis;

31 ——— (ii) ——— wherein a fine adjustment for further extending the jaw is
32 provided by a screw which applies additional force in the nominal Z direction by
33 applying a torque to the arms about the Y axis; and

1 ——— (iii) — further comprising a torque limiter for limiting force applied to the
2 mandible by the left and right arms in the Z direction to prevent injury to the patient.

3 40. — A mandible arm for use in positioning a patient, comprising:

4 ——— two rigid lockable arms, wherein the upper arm has a curved extension which is
5 rotatable in the z-axis and the lower arm does not provide an extension;

6 ——— a curved portion, wherein the curved portion is substantially rigid;

7 ——— a mandible pad, wherein the mandible pad is flexible and pivotable, and wherein
8 the mandible pad has a proximal side configured to attach to the curved portion and a
9 distal side configured to contact a patient's jaw at a at least two of a ramus, a body, and
10 an angle of the patient's jaw; and

11 ——— a connector portion, wherein the connector portion is configured to extend from
12 and attach to a rotatable portion of a support, and wherein the connector portion is
13 further configured to attach to a support that is attached to a base comprising a left side
14 and a right side, wherein the base is configured to substantially accommodate a patient's
15 head, neck, upper and middle back, and shoulders, and wherein the support is movable in
16 two axes such that the mandible pad is positionable to be in contact with a patient's jaw
17 at one or more points and to maintain a patient in a desired position.

18 41. — A first measuring device for use with the device of claim 38, comprising
19 two sides:

20 ——— a first rigid side with four arm extensions, each of which is located within each of
21 the four corners, and each of which comes into contact with the patient's neck;

22 ——— a second rigid side consists of a 35° incline, of which rests a measuring device
23 used to confirm the neck flexion angle of 35° to achieve the desired position.

24 42. — A second measuring device for use with the device of claim 38,
25 comprising two sides:

26 ——— a first rigid triangular side with three arm extensions, each of which is located
27 within each of the three corners, and each of which comes in contact with the patient's
28 head; the arm extensions are each adjustable along the z-axis to achieve the desired
29 position;

30 ——— a second rigid side consists of a 15° incline, of which rests a measuring device
31 used to confirm the head extension angle of 15° to achieve the desired position.

32 43. — A flexible and soft head restraining device for a patient, comprising:

33 ——— a first proximal end that attaches to one side of the first side of the base; which
34 can then extend horizontally and come in contact with the patient's head and attach to the

1 opposite side of the first surface of the base; the device is adjustable and able to secure
2 the patient's head to the first surface of the base to prevent the patient from disengaging
3 from the desired position.

4 44. — A method for positioning a patient comprising the steps of:
5 — providing the device of claim 38;
6 — placing the patient's head, neck, upper and middle back, and shoulders
7 substantially on the base; using an adjustable device to place the patient's head, neck,
8 upper and middle back, and shoulders in a desired position; optionally using a measuring
9 device to confirm the desired position; moving the first mandible arm to contact the
10 patient's jaw; moving the second mandible arm to contact the patient's jaw; wherein the
11 contact of the first mandible arm and the second mandible arm provides sufficient force
12 to substantially maintain the patient's head and/or jaw in a desired position.

13 45. — The method of claim 44, characterized by one or more of the following
14 features:

15 — (a) — wherein all three axes (oropharyngeal, laryngeal, tracheal) are aligned for
16 the recommended view for intubation;

17 — (b) — wherein the patient's head height is adjusted with respect to the Z axis by
18 using a jack, and

19 — (c) — wherein the device includes a squeeze released jaw thrust grip, and
20 including the step of moving the jaw thrust grip in the z direction.

21 46. — A device for positioning a patient, comprising:

22 — a base subassembly comprising a surface for supporting a carriage subassembly,
23 where the first surface of the support arm supports the patients head and is adjustable in
24 the Z axis, the second surface supports the patient's neck and is adjustable in the z axis,
25 to place the patient in the desired sniffing position;

26 — the surface of the upper arm is lowered until comfortably tight and locked, for
27 constraining the patients head in translation along all three axes;

28 — a flexible band for placement over the patient's forehead, for securing it to the
29 sniff subassembly by applying a constant constraining force in the X direction;

30 — a first mandible arm extending vertically from the first surface of the carriage
31 subassembly, wherein the first vertically adjusted portion is lockable in rotation about the
32 Z axis, wherein the first mandible arm is positionable to be in contact with the patient's
33 jaw; and

1 ——— a second mandible arm extending vertically from the third surface of the carriage
2 subassembly, wherein the second vertically adjusted portion is lockable in rotation about
3 the Z axis, wherein the second mandible arm is positionable to be in contact with the
4 patient's jaw;

5 ——— wherein the first mandible arm and the second mandible arm are movable such
6 that each is positionable to be in contact with the patient's jaw and to maintain the patient
7 in a desired position while lying on his or her side and leaving the provider hands free.

8 ——— 47. ——— The device of claim 46, characterized by one or more of the following
9 features ———

10 ——— (a) ——— wherein the mandible arm is positionable to be in contact with the
11 patient's jaw at a ramus, a body, or an angle of the patient's jaw while the patient is lying
12 on his or her side, wherein each of the first mandible arm and the second mandible arm
13 preferably is positionable in contact with the patient's jaw at two or more of a ramus, a
14 body, or an angle of the patient's jaw while the patient is lying on his or her side, and/or
15 wherein each of the first mandible arm and the second mandible arm preferably is
16 positionable in contact with a patient's jaw at a ramus, a body, and an angle of the
17 patient's jaw while the patient is lying on his or her side;

18 ——— (b) ——— further including a mandible pad on the first and second mandible arms,
19 for contact with the patient's jaw;

20 ——— (c) ——— wherein all surfaces of the carriage subassembly are movable relative to
21 the base, wherein the first and third surfaces of the support arm preferably are movable
22 relative to the base in one axes, and the second surface of the carriage subassembly is
23 movable relative to the base in three axes;

24 ——— (d) ——— wherein the base is rectangular and the carriage subassembly surfaces are
25 e-shaped;

26 ——— (e) ——— wherein the mandible pads preferably are formed of a resiliently
27 deformable material, wherein the mandible pads are formed of foam;

28 ——— (f) ——— wherein the first mandible arm and the second mandible arm are
29 removably connected to the first surface of the carriage subassembly and the third
30 surface of the carriage subassembly, respectively;

31 ——— (g) ——— wherein the first mandible arm is movable relative to the first surface of
32 the carriage subassembly and the second mandible arm is movable relative to the third
33 surface of the carriage subassembly;

- 1 ~~—— (h) —— wherein the desired position is the sniffing position while lying on a side,~~
2 ~~aligning all 3 axes (oropharyngeal, laryngeal, and tracheal), and/or the jaw thrust~~
3 ~~maneuver;~~
- 4 ~~—— (i) —— wherein the second surface of the carriage subassembly further comprises~~
5 ~~a neck rest disposed to provide optimal flexion of the patient's neck and optimal head~~
6 ~~extension to acquire the desired position;~~
- 7 ~~—— (j) —— wherein the first and second mandible arms are configured to extend the~~
8 ~~patient's jaw when rotated in the x-axis;~~
- 9 ~~—— (k) —— wherein the plurality of mandible arms are configured to extend the~~
10 ~~patient's jaw when rotated in the x-axis;~~
- 11 ~~—— (l) —— wherein the device is formed of MRI or Xray compatible materials;~~
- 12 ~~—— (m) —— wherein the carriage subassembly is reversible, allowing the patient to be~~
13 ~~placed on an opposite side;~~
- 14 ~~—— (n) —— further including a level for determining a patient's neck flexion angle;~~
- 15 ~~—— (o) —— wherein the base further comprises a distal neck rest disposed on the first~~
16 ~~surface configured to provide optimal flexion of the patient's neck and a proximal~~
17 ~~inclined head rest to provide optimal head extension to provide a desired patient position;~~
18 ~~——~~
- 19 ~~—— (p) —— wherein the first and second support surfaces and first and second~~
20 ~~rotatable portions are adjustable while the patient is in contact with the first and second~~
21 ~~mandible arms;~~
- 22 ~~—— (q) —— wherein the base subassembly comprises:~~
- 23 ~~—— a rigid inclined side with two ends;~~
- 24 ~~—— a proximal end which is detachable from the distal side of the first side of~~
25 ~~the base; the desired position can be obtained by different body habitus' by adjusting the~~
26 ~~height of the first base;~~
- 27 ~~—— a distal end comprises an extension mechanism to maintain the desired~~
28 ~~angle to maintain the patient in the desired position;~~
- 29 ~~—— a foam pad that lies on top of the rigid inclined side and comes in contact~~
30 ~~with the patient's upper back, middle back, and shoulders;~~
- 31 ~~—— (r) —— wherein the inclined side supports a patient's upper back, middle back,~~
32 ~~and shoulders, and will enable gravity to displace weight off of the patient's chest,~~
33 ~~including in obese patients;~~
- 34 ~~—— (s) —— wherein the device is formed of MRI or Xray compatible materials.~~

1 ——— (t) ——— wherein placing the head and neck substantially on the neck rest on a
2 distal end of the inclined side and a head rest on a proximal end of the inclined side
3 places the patient in the desired position within eliciting pain; and

4 ——— (u) ——— wherein the device is adjustable along a y axis to displace weight off of a
5 patient's chest; is adjustable along a y axis to align the ear and the sternum horizontally
6 to achieve maximal air exchange in obese patients; and is adjustable along a z axis for
7 elevating and lowering obese patients without the help of health care workers.

8 ——— 48. ——— A method for positioning a patient comprising the steps of:

9 ——— providing the device of claim 46;

10 ——— placing the patient's head substantially on the first surface of the carriage
11 subassembly using an adjustable device to place the patient's head and neck in a desired
12 position; moving the first mandible arm to contact the patient's jaw; moving the second
13 mandible arm to contact the patient's jaw; wherein contact of the first mandible arm and
14 the second mandible arm provides sufficient force to substantially maintain the patient's
15 head and/or jaw in a desired position.

16 ——— 49. ——— The method of claim 48, wherein all three axes (oropharyngeal,
17 laryngeal, tracheal) are aligned for view for intubation.

18 ——— 50. ——— A mandible arm for positioning a patient, comprising:

19 ——— a rigid lockable arm, wherein the arm has a curved extension which is rotatable in
20 the x axis;

21 ——— a curved portion, wherein the curved portion is substantially rigid;

22 ——— a mandible pad, wherein the mandible pad is flexible and pivotable, and wherein
23 the mandible pad has a proximal side configured to attach to the curved portion and a
24 distal side configured to contact a patient's jaw at a at least two of a ramus, a body, and
25 an angle of the patient's jaw; and

26 ——— a connector portion, wherein the connector portion is configured to extend from
27 and attach to a rotatable portion of a support, and wherein the connector portion is
28 further

29 configured to attach to a support that is attached to the carriage subassembly comprising
30 a left side and a right side, wherein the carriage subassembly is configured to
31 substantially accommodate a patient's head and wherein the carriage subassembly is
32 movable in one axes such that the mandible pad is positionable to be in contact with a
33 patient's jaw at one or more points and to maintain a patient in a desired position,

1 | wherein the carriage subassembly is reversible, allowing the patient to be place on an
2 | opposite side.
3 |

1 Claims:

2 1. A disposable anesthesia nasal and oral mask which can be used either as a
3 nasal mask or can be connected together through a connector and used as a combination
4 nasal-oral mask covering and sealing around a patient's mouth and nose, wherein said
5 nasal mask and said oral mask are disconnected, said connector closes to prevent gases
6 from escaping from the nasal mask whereupon the nasal mask may be used alone.

7 2. A nasal and oral mask as claimed in claim 1, further comprising: a first
8 nasal inflatable or non-inflatable cushion that consists of a nasal bridge region, a cheek
9 region, and an upper lip region and a second mouth inflatable or non-inflatable cushion
10 which consists of a lower lip region, a cheek region, and an upper lip region; a first nasal
11 membrane comprising a substantially triangularly shaped frame of resilient material
12 having a first molded inwardly curved rim of said first nasal membrane; a second nasal
13 membrane of resilient material, said second nasal membrane being thinner, as thin, or
14 thicker than said first nasal membrane, said second nasal membrane having a second
15 molded inwardly curved rim, said second nasal membrane curved rim spaced a first
16 distance from said first nasal membrane curved rim in said cheek region and said second
17 nasal membrane curved rim spaced a second distance from said first nasal membrane
18 curved rim in said nasal bridge region, said second distance greater than said first
19 distance, said distances measured when the mask is not in use, a portion of said second
20 membrane curved rim forming a face contacting seal; a first mouth membrane
21 comprising a substantially oval shaped frame of resilient material having a first molded
22 inwardly curved rim of said first mouth membrane; a second mouth membrane of
23 resilient material, said second mouth membrane being thinner, as thin, or thicker than
24 said first mouth membrane, said second mouth membrane having a second molded
25 inwardly curved rim, said second mouth membrane curved rim spaced a first distance
26 from said first mouth membrane curved rim in said cheek region and said second mouth
27 membrane curved rim spaced a second distance from said first mouth membrane curved
28 rim in said mouth region, said second distance greater than said first distance, said
29 distances measured when the mask is not in use, a portion of said second membrane
30 curved rim forming a face contacting seal; an attachment with two apertures; where the
31 first aperture is fixed to the oral mask and can connect to the second aperture, which is
32 fixed to the nasal mask; where when they are connected together it comprises an
33 anesthesia full face mask, covering and sealing around the mouth and nose.

34 3. A nasal and oral mask as claimed in claim 1 or claim 2, characterized by

1 one or more of the following features:

2 (a) wherein said second molded rim and said first molded rim have a co-
3 located notch to accommodate the bridge of a wearer's nose;

4 (b) wherein said first nasal membrane molded rim and said second nasal
5 membrane molded rim are substantially saddle-shaped;

6 (c) wherein said second nasal membrane is shaped so that said seal portion, in
7 use, contacts at least a wearer's nose;

8 (d) wherein said seal portion, in use, contacts the facial tissue around the
9 sides and over the bridge of the nose, and between the base of the nose and the top lip;

10 (e) wherein said second rim and seal portion are shaped to generally match
11 facial contours in the region of facial tissue around the sides and over the bridge of the
12 nose, and between the base of the nose and the upper lip;

13 (f) wherein the first and second nasal membranes comprise one molded
14 piece, without being adhered together by an adhesive.

15 (g) wherein the first molded inwardly curved rim of said first nasal membrane
16 is as thick, less thick, or thicker than the second nasal membrane;

17 (h) wherein the second molded inwardly curved rim of the second nasal
18 membrane is as thick, less thick, or thicker than the first nasal membrane;

19 (i) wherein said second molded rim and said first molded rim have a co-
20 located notch to accommodate the lips of a wearer's mouth;

21 (j) wherein said first mouth membrane molded rim and said second mouth
22 membrane molded rim are substantially oval shaped;

23 (k) wherein said second mouth membrane is shaped so that said seal portion,
24 in use, contacts at least a wearer's upper and lower lip;

25 (l) wherein said seal portion, in use, contacts the facial tissue around the
26 sides and over the upper and lower lips of the mouth;

27 (m) wherein said second rim and seal portion are shaped to generally match
28 facial contours in the region of facial tissue around the sides and over the upper and
29 lower lip of the mouth;

30 (n) wherein the first and second mouth membranes comprise one molded
31 piece, without being adhered together by an adhesive;

32 (o) wherein the first molded inwardly curved rim of said first mouth
33 membrane is as thick, less thick, or thicker than the second mouth membrane, and

34 (p) wherein the second molded inwardly curved rim of the second mouth

1 membrane is as thick, less thick, or thicker than the first mouth membrane.

2 4. A nasal mask, oral mask or full face mask, for connection to a wearer's
3 face comprising: a mask body for connection with a supply of breathable gas, whether
4 oxygen, air, anesthetic gases or any other gas; and a nasal inflatable or non-inflatable
5 cushion secured to said mask body, the body and cushion forming a nose-receiving
6 cavity, said cushion including: a nasal bridge region, a cheek region and an upper lip
7 region; a substantially triangularly-shaped first nasal membrane of resilient material
8 having a first molded inwardly curved rim to surround wearer's nose; a second nasal
9 membrane also of resilient material, said second membrane being relatively more
10 flexible than said first nasal membrane, said second nasal membrane having a second
11 molded inwardly curved rim, said second molded rim being of the same general shape as
12 said first molded rim and fixed to and extending away from said first nasal membrane so
13 as to have a second nasal membrane inner surface spaced a first distance from an outer
14 surface of said first molded rim in said cheek region and said second membrane inner
15 surface spaced a second distance from said first nasal membrane outer surface of said
16 first molded rim in said nasal bridge region, said second distance greater than said first
17 distance, said distances measured when the mask is not in use, a portion of said second
18 molded rim forming a face contacting seal; and wherein said seal portion is substantially
19 coterminous with respect to said second molded rim and is resiliently deformable
20 towards said first nasal membrane in use of said mask.

21 5. A nasal mask, oral mask, or full face mask, covering and sealing the
22 mouth and nose, as claimed in claim 4, characterized by one or more of the following
23 features:

24 (a) wherein said a nasal mask, oral mask, or full face mask body includes
25 either integrated head strap attachment points using either an anterior approach or
26 posterior approach or it can have separated head strap attachment points using either an
27 anterior approach or a posterior approach that placed over the nasal mask, oral mask, or
28 full face mask body, which attach to a surface that can secure the nasal mask, oral mask,
29 or full face mask to the wearer's face to ensure a tight seal and to maintain the wearer's
30 head and neck in the desired position to maintain airway patency;

31 (b) further comprising securing straps fixed to said attachment points which
32 can secure the wearer's head to a surface and maintain the wearer's head and neck in the
33 desired position;

34 (c) wherein said second membrane molded rim and said first nasal membrane

1 molded rim each have a co-located notch to accommodate the bridge of a nose;
2 (d) wherein said first and second molded rims are substantially saddle-
3 shaped;
4 (e) wherein said second nasal membrane is shaped so that said seal portion, in
5 use, contacts at least wearer's nose;
6 (f) wherein said seal portion, in use, contacts the facial tissue around the
7 sides and over the bridge of the nose, and between the base of the nose and the upper lip,
8 and
9 (g) wherein said rim and said seal portion are shaped to generally match
10 facial contours in the region of facial tissue around the sides and over the bridge of the
11 nose, and between the base of the nose and the upper lip.

12 6. A nasal noninvasive positive pressure ventilating (CPAP/BiPAP), oral
13 noninvasive positive pressure ventilating (CPAP/BiPAP), or full face mask noninvasive
14 positive pressure ventilating (CPAP/BiPAP) treatment apparatus comprising: a
15 generator for the supply of gas at a pressure below, equal to, or elevated above
16 atmospheric pressure; a gas delivery conduit coupled to said generator; and a nasal mask
17 oral mask, full face mask in turn coupled to said conduit to said nasal mask, oral mask,
18 full face mask including: a mask body for connection with a supply of breathable gas;
19 and a nasal inflatable or non-inflatable cushion secured to said mask body, the body and
20 cushion forming a nose-receiving cavity, the cushion including: a nasal bridge region, a
21 cheek region and a lip region; a substantially triangularly-shaped first nasal membrane of
22 resilient material having a first nasal membrane having a molded inwardly curved rim; a
23 second membrane having a second molded inwardly curved rim also of resilient material,
24 said second nasal membrane being relatively more flexible than said first membrane, and
25 being of the same general shape as said first molded inwardly curved rim and fixed to
26 and extending away from said first nasal membrane so as to have an inner surface spaced
27 a first distance from said first molded rim in said cheek region and said second nasal
28 membrane inner surface spaced a second distance from said first molded rim, said
29 second distance greater than said first distance, said distances measured when the mask
30 is not in use, a portion of said second molded rim forming a face contacting seal; and
31 Wherein said seal portion is generally coterminous with respect to said second molded
32 rim and is resiliently deformable towards said first membrane in use of said mask.

33 7 The non-invasive positive pressure ventilation (BiPAP/CPAP) treatment
34 apparatus as claimed in claim 5, characterized by one or more of the following features:

1 (a) wherein said mask body includes attachment points which can secure the
2 wearer's head to a surface and maintain the wearer's head and neck in position;

3 (b) further comprising securing straps fixed to said attachment points which
4 can secure the wearer's head to a surface and maintain the wearer's head and neck in
5 position;

6 (c) wherein said first and second molded rims each have a co-located notch to
7 accommodate the bridge of a nose;

8 (d) wherein said first and second molded rims are substantially saddle-
9 shaped;

10 (e) wherein said second nasal membrane is shaped so that said seal portion, in
11 use, contacts at least wearer's nose;

12 (f) wherein said seal portion, in use, contacts the facial tissue around the
13 sides and over the bridge of the nose, and facial tissue around the sides and over the
14 bridge of the nose, between the base of the nose and the upper lip, and

15 (g) wherein said second molded rim and said seal portion are shaped to
16 generally match facial contours in the region of facial tissue around the sides and over
17 the bridge of the nose, between the base of the nose and the upper lip.

18 8. An oral mask for connection to a wearer's face comprising: a mask body
19 for connection with a supply of breathable gas; and an inflatable or non-inflatable mouth
20 cushion secured to said mask body, the body and cushion forming a mouth-receiving
21 cavity, said cushion including: a mouth region, a cheek region and an upper and lower lip
22 region; a substantially oval-shaped first mouth membrane of resilient material having a
23 first molded inwardly curved rim to surround a wearer's nose; a second mouth
24 membrane also of resilient material, said second mouth membrane being relatively more
25 flexible than said first mouth membrane, said second mouth membrane having a second
26 molded inwardly curved rim, said second molded rim being of the same general shape as
27 said first molded rim and fixed to and extending away from said first mouth membrane
28 so as to have a second mouth membrane inner surface spaced a first distance from an
29 outer surface of said first molded rim in said cheek region and said second mouth
30 membrane inner surface spaced a second distance from said first mouth membrane outer
31 surface of said first molded rim in said mouth region, said second distance greater than
32 said first distance, said distances measured when the mask is not in use, a portion of said
33 second molded rim forming a face contacting seal; and wherein said seal portion is
34 substantially coterminous with respect to said second molded rim and is resiliently

1 deformable towards said first mouth membrane in use of said mask.

2 9. The mask as claimed in claim 8, characterized by one or more of the
3 following features:

4 (a) wherein said mask body includes attachment points which can secure the
5 wearer's head to a surface and maintain the wearer's head and neck in position;

6 (b) further comprising securing straps fixed to said attachment points which
7 can secure the wearer's head to a surface and maintain the wearer's head and neck in
8 position;

9 (c) wherein said second membrane molded rim and said first mouth
10 membrane molded rim each have a co-located notch to accommodate the mouth;

11 (d) wherein said first and second molded rims are substantially oval-shaped;

12 (e) wherein said second mouth membrane is shaped so that said seal portion,
13 in use, contacts at least wearer's mouth;

14 (f) wherein said seal portion, in use, contacts the facial tissue around the
15 sides and over the mouth, and between the upper and lower lip;

16 (g) wherein said rim and said seal portion are shaped to generally match
17 facial contours in the region of facial tissue around the sides and the mouth, and between
18 the upper and lower lip.

19 10. The nasal mask, oral mask, or full facemask as claimed in claim 4, further
20 patent tubing which has two ends to be used as an gas source to transport patients, where
21 a distal end of the tubing is connected to either a stand alone or a portable generator for
22 the supply of gas at a pressure below, equal to, or elevated above atmospheric pressure; a
23 gas delivery conduit coupled to said generator a portable gas supply and a proximal end
24 is connected to an adaptor, which contains an End-Tidal CO2 port, a nebulizer port, a
25 PEEP valve port, expiratory port and/or valve, pressure relief valve, which has an
26 aperture which attaches to either the nasal mask, the oral mask, or the full face mask.

27 11. The nasal mask, oral mask or full face mask, as claimed in claim 4,
28 connected to a generator for the supply of gas, where the amount and concentration of
29 gas delivered is controlled by the supply source as well as the expiratory port, and/or
30 used as a scavenger system by connecting the nasal mask and the oral mask
31 simultaneously, where the nasal mask can be used to deliver positive pressure and the
32 oral mask can be connected to a suctioning device to properly store and/or dispose gases.

33 12. The nasal mask, oral mask or full face mask as claimed in claim 4,
34 contoured around the patient's nasal bridge, nose, and upper lip such that it and the

1 generator gas supply it is connected to does not interfere with the operator's access to the
2 mouth/oral cavity, lips, cheeks, chin, jaw, and neck, and/or connected to a resuscitator
3 bag with or without a gas supply attached to the resuscitator bag.

4 13. A device for positioning a patient, comprising:
5 a carriage having a first surface that supports the patients in an inclined position,
6 and is adjustable in the Z-axis, a second surface that supports the patient's head and neck
7 and is adjustable to place the patient in a generally desired sniffing position; and
8 a pneumatic or mechanical jack, or an expandable bellows, supported on the
9 second surface for independently raising the patient's head relative to the second surface.

10 14. The device of claim 13, characterized by one or more of the following
11 features:

12 (a) wherein the expandable bellows comprises a plurality of rigid concentric
13 rings joined by flexible membranes on a rigid base, wherein the third side of the base
14 preferably comprises:

15 a rigid inclined side with two ends;

16 a proximal end which is detachable from the distal side of the first side of the
17 base; the desired position can be obtained by different body habitus' by adjusting the
18 height of the first base;

19 a distal end comprises an extension mechanism to maintain the desired angle to
20 maintain the patient in the desired position;

21 a resiliently deformable pad that lies on top of the rigid inclined side and comes
22 in contact with the patient's upper back, middle back, and shoulders;

23 (b) wherein the bellows includes a two-way valve through which air may be
24 added or subtracted; and

25 (c) wherein the bellows is formed of MRI or Xray compatible material.

26 15. A method for positioning a patient to facilitate maintenance of a patent
27 airway under anesthesia, comprising providing a device as claimed in claim 13,
28 positioning the patient on the device, adjusting the first surface to support the patient in a
29 desired inclined position;

30 adjusting the second surface to support the patient's head and neck in a generally
31 desired sniffing position; and

32 activating the pneumatic or mechanical jack, or inflating the expandable bellows
33 to raise the patient's head relative to the second surface to a desired sniffing position.