CLAIMS:

1. A gas delivery system that provides positive airway pressure therapy for a user, the system comprising:

    a mask that couples to a user's face to deliver pressurized gas to an airway of the patient;

    a flow generator system that pressurizes gas, the flow generator system includes at least one motor, the flow generator having an impeller and a housing defining a collection chamber for collection of the air from the impeller, an outlet from the flow generator; and

    a diverter valve movable between an open and closed position and blocking the outlet from the flow generator in the closed position.

2. A gas delivery system of claim 1 wherein the flow generator is detachable from the mask.

3. A gas delivery system of claim 2 further comprising a hose interposed from the mask and the flow generator.

4. A gas delivery system of claim 2 further comprising a base unit configured to couple via a hose to the mask, wherein the flow generator system detachably directly couples to the flow generator.

5. A gas delivery system of claim 1 wherein the flow generator system is integrated with the mask, the mask having a shell defining a mask chamber and a plurality of washout vents for venting exhaust gas and further comprising an acoustic damper unit integrated with the mask and disposed upstream of the flow generator system.

6. A gas delivery system of claim 5 further comprising a moisture retention membrane within the mask chamber for the exchange of moisture into an air flow path of the mask chamber.

7. A gas delivery system of claim 5 further comprising at least one sensor in the mask chamber for monitoring of the airflow in the air flow path of the mask chamber.

8. A gas delivery system of claim 5 wherein the acoustic damper unit includes an internal pathway that repeatedly folds over upon itself to create a convoluted pathway that overlaps itself a plurality of times.

9. A gas delivery system of claim 5 further comprising:

at least one unassisted breathing orifice that allows fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one unassisted breathing orifice sized to allow unencumbered / free breathing; and

the diverter valve movable from the open position that obstructs the at least one unassisted breathing orifice and allows pressurized gases from the flow generator into the interior of the mask orifice during inspiration by the patient and allows gas flow through the at least one unassisted breathing orifice during expiration by the patient and the closed position blocking the outlet from the flow generator and allowing unencumbered breathing through the at least one unassisted breathing orifice.

10. A gas delivery system of claim 1 wherein the collection chamber has a constant cross sectional area.

11. A gas delivery system of claim 1 wherein the collection chamber has an increasing cross sectional area.

12. A gas delivery system of claim 1 further comprising a controller configured to control pressure of the gas supplied by the flow generator to within a pressure range of from 0 cm/H_2O to 30 cm/H_2O.

13. A gas delivery system of claim 1, further comprising a power supply attached to the mask.

14. A gas delivery system of claim 13, wherein the power supply includes at least one battery and is connected to a strap and configured to attach to the body of the patient.

15. A gas delivery system of claim 13, wherein the power supply includes at least one battery and is connected to a strap and configured to rest against the back of the neck of the patient.

16. A gas delivery system that provides positive airway pressure therapy for a user, the system comprising:

a mask that couples to a user's face to deliver pressurized gas to an airway of the patient;

a flow generator system that pressurizes gas, the flow generator system includes at least one motor, the flow generator having an impeller and a housing defining a collection chamber for collection of the air from the impeller, an outlet from the flow generator;

the mask includes at least one washout vent that places an interior of the mask in fluid communication, separately from the flow generator system, with an exterior of the mask; and

an acoustic damper unit integrated with the mask and disposed upstream of the flow generator system.

17. A gas delivery system of claim 16 further comprising:

at least one unassisted breathing orifice that allows fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one unassisted breathing orifice sized to allow unencumbered / free breathing; and

a diverter valve movable from an open position that obstructs the at least one unassisted breathing orifice and allows pressurized gases from the flow generator into the interior of the mask orifice during inspiration by the patient and allows gas flow through the at least one unassisted breathing orifice during expiration by the patient and a closed position blocking the outlet from the flow generator and allowing unencumbered breathing through the at least one unassisted breathing orifice.

18. A gas delivery system of claim 17 further comprising a moisture retention membrane within the mask chamber for the exchange of moisture into an air flow of the mask.

19. A gas delivery system of claim 17 further comprising at least one sensor in the mask chamber for monitoring of the airflow in the air flow path of the mask chamber.

20. A gas delivery system of claim 17 wherein the acoustic damper unit includes an internal pathway that repeatedly folds over upon itself to create a convoluted pathway that overlaps itself a plurality of times.

21. A gas delivery system of claim 20, wherein the acoustic damper unit comprises a resonance noise cancellation unit.

22. A gas delivery system that provides positive airway pressure therapy for a user, the system comprising:

a mask that couples to a user's face to deliver pressurized gas to an airway of the user, the mask including

a flow generator system that pressurizes gas, the flow generator system including at least one motor, the flow generator having an impeller and a housing defining a collection chamber for collection of the air from the impeller, an outlet from the flow generator;

at least one washout vent that allows constant fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one washout vent sized to allow pressure to be maintained in the interior of the mask;

at least one unassisted breathing orifice that allows fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one unassisted breathing orifice sized to allow unencumbered / free breathing;

a diverter valve movable from an open position that obstructs the at least one unassisted breathing orifice and allows pressurized gases from the flow generator into the interior of the mask orifice during inspiration by the patient and allows gas flow through the at least one unassisted breathing orifice during expiration by the patient and a closed position blocking the outlet from the flow generator and allowing unencumbered breathing through the at least one unassisted breathing orifice; and

an acoustic damper unit integrated with the mask and disposed upstream of the flow generator system.

CLAIMS:

1. A gas delivery system that provides positive airway pressure therapy for a user, the system comprising:

a mask that couples to a user's face to deliver pressurized gas to an airway of the patient;

a flow generator system that pressurizes gas, the flow generator system i including

at least one motor,

a flow generator having an impeller, a housing defining a collection chamber for collection of the air from the impeller, and an outlet from the flow generator; and

a diverter valve movable between an open and closed position and blocking the outlet from the flow generator in the closed position,

wherein the flow generator system is integrated with the mask, the mask having a shell defining a mask chamber and a plurality of washout vents for venting exhaust gas and further comprising an acoustic damper unit integrated with the mask and disposed upstream of the flow generator system.

2. A gas delivery system of claim 1 wherein the flow generator is detachable from the mask.

3. A gas delivery system of claim 2 further comprising a hose interposed from the mask and the flow generator.

4. A gas delivery system of claim 2 further comprising a base unit configured to couple via a hose to the mask, wherein the flow generator system detachably directly couples to the base unit.

5. A gas delivery system of claim 1 further comprising a moisture retention membrane within the mask chamber for the exchange of moisture into an air flow path of the mask chamber.

6. A gas delivery system of claim 1 further comprising at least one sensor in the mask chamber for monitoring of the airflow in the air flow path of the mask chamber.

7. A gas delivery system of claim 1 wherein the acoustic damper unit includes an internal pathway that repeatedly folds over upon itself to create a convoluted pathway that overlaps itself a plurality of times.

8. A gas delivery system of claim 1 further comprising:

at least one unassisted breathing orifice that allows fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one unassisted breathing orifice sized to allow unencumbered / free breathing; and

the diverter valve movable from the open position that obstructs the at least one unassisted breathing orifice and allows pressurized gases from the flow generator into the interior of the mask orifice during inspiration by the patient and allows gas flow through the at least one unassisted breathing orifice during expiration by the patient and the closed position blocking the outlet from the flow generator and allowing unencumbered breathing through the at least one unassisted breathing orifice.

9. A gas delivery system of claim 1 wherein the collection chamber has a constant cross sectional area.

10. A gas delivery system of claim 1 wherein the collection chamber has an increasing cross sectional area.

11. A gas delivery system of claim 1 further comprising a controller configured to control pressure of the gas supplied by the flow generator to within a pressure range of from 0 cm/H20 to 30 cm/$H_2$0.

12. A gas delivery system of claim 1, further comprising a power supply attached to the mask.

13. A gas delivery system of claim 12, wherein the power supply includes at least one battery and is connected to a strap and configured to attach to the body of the patient.

14. A gas delivery system of claim 12, wherein the power supply includes at least one battery and is connected to a strap and configured to rest against the back of the neck of the patient.

15. A gas delivery system that provides positive airway pressure therapy for a user, the system comprising:

a mask that couples to a user's face to deliver pressurized gas to an airway of the patient;

a flow generator system that pressurizes gas integrated with the mask, the flow generator system includes at least one motor, the flow generator having an

impeller and a housing defining a collection chamber for collection of the air from the impeller, an outlet from the flow generator;

the mask includes at least one washout vent that places an interior of the mask in fluid communication, separately from the flow generator system, with an exterior of the mask; and

an acoustic damper unit integrated with the mask and disposed upstream of the flow generator system.

16. A gas delivery system of claim 15 further comprising:

at least one unassisted breathing orifice that allows fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one unassisted breathing orifice sized to allow unencumbered / free breathing; and

a diverter valve movable from an open position that obstructs the at least one unassisted breathing orifice and allows pressurized gases from the flow generator into the interior of the mask orifice during inspiration by the patient and allows gas flow through the at least one unassisted breathing orifice during expiration by the patient and a closed position blocking the outlet from the flow generator and allowing unencumbered breathing through the at least one unassisted breathing orifice.

17. A gas delivery system of claim 16 further comprising a moisture retention membrane within the mask chamber for the exchange of moisture into an air flow of the mask.

18. A gas delivery system of claim 16 further comprising at least one sensor in the mask chamber for monitoring of the airflow in the air flow path of the mask chamber.

19. A gas delivery system of claim 16 wherein the acoustic damper unit includes an internal pathway that repeatedly folds over upon itself to create a convoluted pathway that overlaps itself a plurality of times.

20. A gas delivery system of claim 19, wherein the acoustic damper unit comprises a resonance noise cancellation unit.

21. A gas delivery system that provides positive airway pressure therapy for a user, the system comprising:

a mask that couples to a user's face to deliver pressurized gas to an airway of the user, the mask including

a flow generator system that pressurizes gas integrated with the mask, the flow generator system including at least one motor, the flow generator having an impeller and a housing defining a collection chamber for collection of the air from the impeller, an outlet from the flow generator;

at least one washout vent that allows constant fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one washout vent sized to allow pressure to be maintained in the interior of the mask;

at least one unassisted breathing orifice that allows fluid communication, separately from the flow generator system, between an exterior of the mask and an interior of the mask, the at least one unassisted breathing orifice sized to allow unencumbered / free breathing;

a diverter valve movable from an open position that obstructs the at least one unassisted breathing orifice and allows pressurized gases from the flow generator into the interior of the mask orifice during inspiration by the patient and allows gas flow through the at least one unassisted breathing orifice during expiration by the patient and a closed position blocking the outlet from the flow generator and allowing unencumbered breathing through the at least one unassisted breathing orifice; and

an acoustic damper unit integrated with the mask and disposed upstream of the flow generator system.