

[0008] Additionally or alternatively, it would be desirable to provide an apparatus for delivering a flow of gas that has one or more removable components to assist with the use, functioning, or configuration of the apparatus.

[0009] It is an object of one or more of the disclosed embodiments to provide an apparatus for delivering a flow of gas that has one or more features that assist with the use, functioning, or configuration of the apparatus or improves the safety of the apparatus, or that will at least provide the public or a medical professional with a useful choice.

[0010] Thus, in accordance with certain features, aspects and advantages of at least one of the embodiments disclosed herein, a breathing assistance apparatus for delivering a flow of gas is disclosed, the apparatus comprising: ~~a housing with:~~ an apparatus main housing with a recess configured to receive a motor module or containing a motor module, and a gasflow passage from the recess and that is in fluid communication with an outlet port for a flow of gas, wherein the recess is defined by at least one wall of the apparatus main housing that is substantially continuous, gas impermeable, and unbroken, other than the gasflow passage from the recess, wherein an interior of the apparatus main housing comprises electrical and/or electronic components, and wherein the at least one wall of the recess is/are configured to pneumatically isolate the electrical and/or electronic components from gasflow through or from the motor module, wherein the apparatus comprises an inlet to deliver gases to the motor module in the recess, wherein the recess comprises a recess opening in an exterior wall of the apparatus main housing, wherein the recess opening is for receipt of a motor module, wherein the recess extends into the apparatus main housing from the recess opening, wherein the exterior wall is a bottom wall, and wherein said at least one wall that defines the recess is integrally formed with said bottom wall.

~~a recess for a motor and/or sensor module,~~

~~an outlet port for a flow of gas, and~~

~~a removable elbow for a flow of gas, and~~

~~a humidifier with:~~

~~—— a heater,~~

~~— a chamber bay for receipt of a liquid chamber, and~~

~~— a lever and/or detent(s) for assisting with insertion and/or retention and/or removal of the liquid chamber in and/or from the chamber bay.~~

[0011] In some configurations, the apparatus comprises a liquid chamber for receipt in the chamber bay, the liquid chamber comprising an inlet port connectable to the outlet port, and an outlet port connectable to the removable elbow. In some configurations, at least one of the ports comprises one or more flexible fingers configured to provide positive engagement between that port and the port to which it is connectable.

10 **[0012]** In some configurations, the apparatus comprises a user interface.

CLAIMS

1. A breathing assistance apparatus for delivering a flow of gas, comprising:

an apparatus main housing with a recess ~~for receipt of, or containing,~~configured to receive a motor module or containing a motor module, and

5 a gasflow passage from the recess and that is in fluid communication with an outlet port for a flow of gas,

wherein the recess is defined by at least one wall of the apparatus main housing that is substantially continuous, gas impermeable, and unbroken, other than the gasflow passage from the recess, wherein an interior of the apparatus main housing
10 comprises electrical and/or electronic components, and wherein the at least one wall of the recess is/are configured to pneumatically isolate the electrical and/or electronic components from gasflow through or from the motor module, wherein the apparatus comprises an inlet to deliver gases to the motor module in the recess, wherein the recess comprises a recess opening in an exterior wall of the apparatus main housing,
15 wherein the recess opening is for receipt of a motor module, ~~and~~ wherein the recess extends into the apparatus main housing from the recess opening, wherein the exterior wall is a bottom wall, and wherein said at least one wall that defines the recess is integrally formed with said bottom wall.

~~2. A breathing assistance apparatus according to claim 1, wherein the recess opening is in a bottom of the apparatus main housing.~~

~~3. A breathing assistance apparatus according to claim 1, wherein the recess opening is in a top of the apparatus main housing.~~

~~4~~2. A breathing assistance apparatus according to ~~any one of claims 1 to 3,~~ comprising a motor module positioned in the recess.

25 ~~5~~3. A breathing assistance apparatus according to claim ~~4~~2, wherein the motor module is a motor and sensor module.

~~6~~4. A breathing assistance apparatus according to claim ~~5~~3, wherein the motor module comprises a base, a sensing layer, and a cover layer assembled together to form a sub-assembly housing.

75. A breathing assistance apparatus according to claim 64, wherein the sub-assembly housing has a shape that is complementary to a shape of the recess.

86. A breathing assistance apparatus according to claim 64 or 75, wherein the motor module comprises a motor with an impeller, the motor arranged to deliver gas through the gasflow passage.

97. A breathing assistance apparatus according to claim 86, wherein the motor is positioned on the base of the sub-assembly.

108. A breathing assistance apparatus according to any one of claims 64 to 97, wherein the base is configured to close the recess opening when the sub-assembly is positioned in the recess.

119. A breathing assistance apparatus according to any one of claims 64 to 108, wherein the motor module is maintained in position in the recess by fasteners, clips, or a quick release arrangement.

1210. A breathing assistance apparatus according to any one of claims 64 to 119, wherein the sensing layer comprises a gasflow path with one or more sensors.

1311. A breathing assistance apparatus according to claim 1210, wherein the gasflow path is arranged to deliver gas through the gasflow passage.

1412. A breathing assistance apparatus according to any one of claims 53 to 1311, wherein the motor module comprises a gasflow path that comprises a sinuous arrangement.

1513. A breathing assistance apparatus according to any one of claims 1 to 1412, wherein the apparatus main housing comprises an upper chassis and a lower chassis, and wherein the interior of the apparatus main housing is defined between the upper chassis and the lower chassis.

1614. A breathing assistance apparatus according to claim 1513, wherein the recess opening is in a bottom of the apparatus main housing, wherein the exterior wall is a bottom wall of the lower chassis, ~~and wherein said at least one wall that defines the recess is integrally formed with the bottom wall.~~

~~17~~15. A breathing assistance apparatus according to claim ~~16~~14, wherein said at least one wall comprises a peripheral wall and a ceiling.

~~18~~16. A breathing assistance apparatus according to claim ~~17~~15, comprising a gasflow passage tube that is integrally formed with the ceiling, wherein the gasflow
5 passage is provided by the gasflow passage tube.

~~19~~17. A breathing assistance apparatus according to claim ~~18~~16, wherein the gasflow passage tube extends through an outer tube that is integrally formed with the upper chassis.

~~20~~18. A breathing assistance apparatus according to claim ~~18~~-~~16~~ or ~~19~~17, wherein
10 the outlet port is provided in an elbow, and wherein the gasflow passage tube is in fluid communication with a gasflow inlet port of the elbow.

~~21~~19. A breathing assistance apparatus according to any one of claims ~~15~~-~~13~~ to ~~20~~18, wherein the wall(s) of the recess is/are configured such that if there is any
15 leaking of gas from the motor module or gasflow passage, the leaking gas will vent to atmosphere rather than ingressing into the interior of the apparatus main housing that comprises electrical and/or electronic components.

~~22~~20. A breathing assistance apparatus according to any one of claims 1 to ~~21~~19, wherein the motor module is removable from the recess.

~~23~~21. A breathing assistance apparatus according to any one of claims 1 to ~~22~~20,
20 wherein gas that is or comprises oxygen flows through the gasflow passage and/or the outlet port.

~~24~~22. A breathing assistance apparatus according to claim ~~23~~21, wherein the gas is isolated from electrical and/or electronics components in the apparatus main housing.

~~25~~23. A breathing assistance apparatus according to claim ~~8~~6, wherein pressure is
25 lower upstream of the motor impeller and pressure is higher downstream of the motor impeller, and wherein the motor comprises an electrical connection that is positioned upstream of the motor impeller, in the lower pressure region.

~~26~~24. A breathing assistance apparatus according to any one of claims ~~15~~13 to ~~21~~19, wherein the electrical and/or electronic components comprise one or more printed circuit boards.

~~27~~25. A breathing assistance apparatus according to claim 1, wherein the gasflow passage receives gas from the motor module, wherein the gasflow passage is provided by a gasflow passage tube, and wherein said at least one wall that defines the recess comprises a peripheral wall and a ceiling, wherein the gasflow passage tube is integrally formed with the ceiling, and wherein the peripheral wall, the ceiling, and the gasflow passage tube are formed as a single continuous unbroken integral part.