CLAIMS

1. A humidification apparatus including:

~~a blower for generating a gas stream;~~

an apparatus outlet port to enable delivery of gas to a patient;

a removable humidification chamber for containing water;

a humidification compartment that receives the humidification chamber;

a flow path through the apparatus from the blower to the apparatus outlet port; and

an actuator that can be operated by a user to move the humidification chamber from: an operating position in which the humidification chamber is received by the humidification compartment and in which the humidification chamber forms a portion of the flow path through the humidification apparatus; to a releasing position in which the humidification chamber is displaced outwardly from the operating position and in which the user can remove the humidification chamber from the apparatus.

2. The apparatus according to claim 1, wherein the apparatus has a ~~powered device that is operable when the humidification chamber is in the operating position to heat water in the humidification chamber~~blower for generating the gas steam and the flow path extends from the blower to the outlet of the apparatus.

~~3. The apparatus according to claim 2, wherein the actuator locates at least part of the powered device relative to the humidification chamber in the operating position so that the powered device is operable.~~

~~4.~~3. The apparatus according to ~~any one of the preceding claims~~claim 1 or 2, wherein the humidification chamber has a thermally conductive heater base, the humidification compartment has a heater element, and the actuator presses the heater element against the heater base when the humidification chamber is in the operating position.

~~5. The apparatus according to any one of the preceding claims, wherein the flow path has a first portion extending from the blower to the humidification chamber.~~

~~6. The apparatus according to any one of the preceding claims, wherein the flow path has a second portion extending to the apparatus outlet port.~~

~~7.~~4. The apparatus according to any one of the preceding claims, wherein ~~when~~ the flow path is sealed and extends through the humidification chamber ~~is in the operating position, the flow path is completed from the blower through the first portion, through the humidification chamber, and though the second portion~~ to the apparatus outlet port, or a gas stream conduit, when the humidification chamber is in the operative position, and the flow path is broken when in the releasing position.

~~8.~~5. The apparatus according to any one of the preceding claims, wherein the humidification compartment has a flow path outlet port, hereinafter referred to as the outlet port, that is in communication with the outlet of a blower that generates the stream of breathable gas, and the apparatus outlet port can be either a compartment outlet port or humidification chamber outlet port.

~~9. The apparatus according to claim 8, wherein the humidification compartment has a flow path inlet port, hereinafter referred to as the inlet port, that can communicate with a gas stream conduit for supplying the gas stream to a user.~~

~~10. The apparatus according to claim 9, wherein the humidification chamber has a chamber inlet and a chamber outlet, in which the chamber inlet communicates with the outlet port and the chamber outlet communicates with the inlet port.~~

~~11.~~6. The apparatus according to ~~any one of claims 5 to 10~~claim 2, wherein the flow path has a first portion extending from the blower ~~of the flow path is sealed~~ to the humidification chamber and the first portion of the flow path is sealed to the humidification chamber when in the operating position, and the seal is broken when in the releasing position.

~~12.~~7. The apparatus according to ~~any one of claim 5 to 11~~claim 2, wherein the flow path has a second portion ~~of the flow path~~ extending to the apparatus outlet port, the second portion of the flow path is sealed to the humidification chamber when in the operating position, and the seal is broken when in the releasing position.

~~13. The apparatus according to any one of the preceding claims, wherein the apparatus includes a base to which the actuator is operably connected, and the humidification chamber can move from the operating position to the releasing position whilst seated on the base.~~

~~14. The apparatus according to any one of the preceding claims, wherein the user manually moves the humidification chamber from the releasing position to the operating position.~~

~~15.~~8. The apparatus according to any one of the preceding claims, wherein the actuator has an active force or resistance, and the user pushes the humidification chamber against the actuator in moving the humidification chamber from the releasing position to the operating position.

~~16. The apparatus according to any one of the preceding claims, wherein the user operates the actuator to move the humidification chamber from the releasing position to the operating position.~~

~~17. The apparatus according to any one of the preceding claims, wherein the humidification chamber moves inwardly and outwardly of the humidification compartment between the releasing position and the operating position.~~

~~18. The apparatus according to any one of the preceding claims, wherein the humidification chamber moves upwardly and downwardly between the releasing position and the operating position.~~

~~19.~~9. The apparatus according to any one of the preceding claims, wherein the humidification chamber moves a release distance between the operating position and the releasing position, in which the release distance is in the range of 1 to 20 cm, suitably in the range of 2 to 10 cm, and even more suitably in the range of 4 to 10 cm.

~~20.~~10. The apparatus according to any one of the preceding claims, whereby when the humidification chamber is in the operating position, the humidification chamber is located so as not to protrude from the humidification compartment.

~~21.~~11. The apparatus according to any one of the preceding claims, wherein the humidification chamber has a gripping section for manually removing the humidification chamber from the humidification compartment, the gripping section protrudes from the humidification compartment when the humidification chamber is in the releasing position.

~~22.~~12. The apparatus according to claim ~~21~~11, wherein the gripping section is located within the humidification compartment when the humidification chamber is in the operating position.

~~23.~~13. The apparatus according to claim ~~21~~ 11 or ~~22~~12, wherein the gripping section includes a portion of an outer side wall of the chamber that extends outwardly of an opening of the humidification compartment, and the gripping section has a higher friction to a user's hand relative to adjacent surfaces of the humidification chamber.

~~24.~~14. The apparatus according to any one of the preceding claims, wherein the apparatus includes a sealing assembly that seals the flow path, extending between the humidification compartment and the humidification chamber when the humidification chamber is in the operating position.

~~25.~~15. The apparatus according to any one of the preceding claims, wherein the sealing assembly provides a seal between an opening of the humidification compartment and the humidification chamber when the humidification chamber is in the operating position.

~~26.~~16. The apparatus according to claim ~~25~~14, wherein the sealing assembly includes a chamber sealing member extending about an upper part of outer wall of the humidification chamber.

~~27.~~17. The apparatus according to claim ~~25~~14, wherein the chamber sealing member sealingly engages an inner wall of the humidification compartment when the humidification chamber is in the operating position.

~~28.~~18. The apparatus according to any one of claims ~~25~~ 14 to ~~27~~17, wherein the sealing assembly includes a compartment sealing member extending about an upper part of a side wall defining an opening of the humidification compartment.

~~29.~~19. The apparatus according to claim ~~28~~16, wherein the compartment sealing member sealingly engages the humidification chamber when the humidification chamber is in the operating position.

~~30.~~20. The apparatus according to claim ~~28~~ 17 when appended to claim ~~25~~14, wherein the chamber sealing member and the compartment sealing member sealingly engage when the humidification chamber is in the operating position.

~~31. The apparatus according to any one of claims 24 to 30, wherein the sealing assembly includes flow path sealing members that seal the connection between the outlet port of the humidification compartment and the chamber inlet.~~

~~32. The apparatus according to any one of claims 24 to 31, wherein the sealing assembly includes flow path sealing members that seal between the chamber outlet and the inlet port of the compartment.~~

~~33.~~21. The apparatus according to any one of the preceding claims when appended to claim 13, wherein the actuator is operable by a user to control movement of the base to move the humidification chamber between the operating position to the releasing position.

~~34. The apparatus according to any one of the preceding claims, wherein the actuator is a non-powered biasing device that biases the humidification chamber from the operating position toward the releasing position.~~

~~35. The apparatus according to any one of the preceding claims, wherein the user can operate the actuator by applying a first pressing force to the humidification chamber which moves the humidification chamber from the releasing position into the operating position.~~

~~36.~~22. The apparatus according to any one of the preceding claims, wherein the actuator can be operated by the user to move the humidification chamber from the operating position to the releasing position by applying a second pressing force to the humidification chamber which moves the humidification chamber inwardly of the operating position, and then removing the second pressing force, and once the second pressing force has been removed, the actuator is operable to move the humidification chamber from the operating position to the releasing position.

~~37. The apparatus according to any one of claims 1 to 35, wherein the actuator is a powered actuator, in which the actuator can be operated by a controller such as a button, switch or control knob that controls the movement of the movement of the humidification chamber between the operating position and the releasing position.~~

~~38.~~23. The apparatus according to any one of the preceding claims, wherein the apparatus has at least one first coupling device that acts between the humidification

chamber and the humidification compartment, and is operable to releasably lock the humidification chamber in the operating position.

~~39.~~24. The apparatus according to claim ~~38~~ 23~~when appended to claim 35 or 36~~, wherein the first pressing force moves the humidification chamber from the releasing position to the operating position and activates the first coupling device to releasably lock the humidification chamber in the operating position.

~~40. The apparatus according to claim 39, wherein the first pressing force moves the humidification chamber inwardly of the operating position to activate the first coupling device, and when the first pressing force has been removed, the actuator can cause the humidification chamber to move to the operating position in which the humidification chamber is releasably locked.~~

~~41. The apparatus according to any one of claims 39 or 40, wherein the first coupling device is unlocked by action of the second pressing force that moves the humidification chamber inwardly of the operating position.~~

~~42. The apparatus according to any one of claims 39 to 41, wherein the first coupling device has a movable locking member and a biasing member that biases the locking member toward a neutral position, and a fixed cam having working surfaces that are engaged by the locking member and moves the locking member away from the neutral position as the humidification chamber moves from the releasing position toward the operating position, and the working surfaces include a recessed surface that receives the locking member when the humidification chamber is in the operating position, and the locking member can be dislodged from the recessed surface by moving the humidification chamber inwardly into the humidification compartment.~~

~~43. The apparatus according to claim 42, wherein the fixed cam is located on an inner surface of the humidification compartment, and the locking member is connected to the humidification chamber.~~

~~44. The apparatus according to claim 42 or 43, wherein the recessed surface of the fixed cam faces in an inward direction of the humidification compartment.~~

~~45. The apparatus according to claim 42 or 43, wherein the locking member is located on an inner surface of the humidification compartment, and the fixed cam is connected to the humidification chamber.~~

~~46. The apparatus according to claim 45, wherein the recessed surface faces in an outward direction of the humidification compartment.~~

~~47. The apparatus according to any one of claims 42 to 46, wherein the biasing member provides a resistive force that increases as the locking member slides over the fixed cam and the humidification chamber moves toward the operating position, and the resistive force at least in part holds the locking member in the recessed surface.~~

~~48. The apparatus according to any one of claims 42 to 47, wherein the biasing member urges the locking member into the recessed surface when the humidification chamber is in the operating position.~~

~~49. The apparatus according to any one of claims 42 to 48, wherein the actuator assists in holding the locking member in the recessed surface of the fixed cam by the actuator applying an active force or resistance to humidification chamber in a direction from the releasing position to the operating position.~~

~~50. The apparatus according to any one of claims 42 to 49, wherein a plurality of the first coupling devices are arranged about the humidification chamber and the humidification compartment.~~

~~51. The apparatus according to any one of the preceding claims, wherein the apparatus has a powered device that is operable when the humidification chamber is in the operating position to heat water in the humidification chamber, the powered device includes a heater element that can be energized to heat, and the humidification chamber has a thermally conductive heater base that sits on the heater element for thermal engagement therebetween.~~

~~52. The apparatus according to any one of claims 38 to 50 when appended to claim 4, wherein the actuator applies an active force to the humidification chamber in a direction from the operating position toward the releasing position, and the first coupling device can secure the humidification chamber in position in the humidification compartment against the force, thereby pressing the heater element against the heater base.~~

~~53. The apparatus according to any one of the preceding claims, wherein the humidification chamber has a thermally conductive heater base, the humidification~~

~~compartment has a heater element, and the apparatus has at least one first coupling device that acts between the humidification chamber and the humidification compartment and is operable to releasably lock the humidification chamber in the operating position, and wherein the actuator applies an active force to the humidification chamber whilst the first coupling device secures the humidification chamber in the operating position against the active force, thereby pressing the heater element against the heater base.~~

~~54. The apparatus according to claim 50, wherein the powered device includes an induction generator in the humidification compartment, and a co-operating heater base of the humidification chamber that heats on exposure to energy from the induction generator for heating the water in the humidification chamber.~~

~~55. A humidification apparatus including:~~

~~a blower for generating a gas stream,~~

~~a flow path for the gas stream,~~

~~a humidification compartment that can receive a removable humidification chamber; and~~

~~an actuator for moving the humidification chamber, wherein the actuator can be operated by a user to move the humidification chamber so that the humidification chamber moves from:~~

- ~~i) an operating position in which the humidification chamber is received by the humidification compartment and in which the flow path communicates with the humidification chamber so that the gas stream can pass therethrough; to~~
- ~~ii) a releasing position in which the humidification chamber is displaced outwardly from the operating position and in which the user can remove the humidification chamber from the humidification compartment.~~

~~56. The apparatus according to claim 55, wherein the apparatus has a powered device that is operable when the humidification chamber is in the operating position to heat water in the humidification chamber.~~

~~57. The apparatus according to claim 56, wherein the actuator locates at least part the powered device relative to the humidification chamber in the operating position so that the powered device is operable.~~

~~58. The apparatus according to any one of claims 55 to 57, wherein the humidification compartment has a heater element, and the actuator presses the heater element against the humidification chamber base when the humidification chamber is in the operating position.~~

~~59. The apparatus according to any one claims 55 to 58, wherein apparatus has a housing and the blower is located inside the housing.~~

~~60. The apparatus according to any one of claims 55 to 59, wherein the humidification compartment has a flow path outlet port, hereinafter referred to as the outlet port, that is in communication with an outlet of the blower that generates the stream of breathable gas and can communicate with a chamber inlet.~~

~~61. The apparatus according to claim 60, wherein the humidification compartment has a flow path inlet port, hereinafter referred to as the inlet port, that can communicate with a chamber outlet and a gas stream conduit for supplying the gas stream to a user.~~

~~62. The apparatus according to any one of claims 55 to 61, wherein the humidification compartment includes a base to which the actuator is operably connected, and the humidification chamber can move from the operating position to the releasing position whilst seated on the base.~~

~~63. The apparatus according to any one of claims 55 to 62, wherein the actuator has an active force or resistance, and the user pushes the humidification chamber against the actuator in moving the humidification chamber from the releasing position to the operating position.~~

~~64. The apparatus according to any one of claims 55 to 63, wherein the actuator is operable by a user to control movement of the base to move the humidification chamber between the operating position to the releasing position.~~

~~65. The apparatus according to any one of claims 55 to 64, wherein the humidification chamber moves inwardly and outwardly of the humidification compartment between the releasing position and the operating position.~~

~~66. The apparatus according to any one of claims 55 to 64, wherein the humidification chamber moves upwardly and downwardly between the releasing position and the operating position.~~

~~67. The apparatus according to any one of claims 55 to 66, wherein the humidification chamber moves a release distance between the operating position and the releasing position, in which the release distance is in the range of 1 to 20 cm, suitably in the range of 2 to 10 cm, and even more suitably in the range of 4 to 10 cm.~~

~~68. The apparatus according to any one of claims 55 to 67, whereby when the humidification chamber is in the operating position, the humidification chamber is located so as not to protrude from the humidification compartment.~~

~~69. The apparatus according to any one of claims 55 to 68, wherein the housing includes a sealing assembly that seals the flow path, extending between the humidification compartment and the humidification chamber when the humidification chamber is in the operating position.~~

~~70. The apparatus according to claim 69, wherein the sealing assembly provides a seal between an opening of the humidification compartment and the humidification chamber when the humidification chamber is in the operating position.~~

~~71. The apparatus according to claims 70, wherein the sealing assembly includes a compartment sealing member extending about an upper part of a side wall defining an opening of the humidification compartment.~~

~~72. The apparatus according to claim 71, wherein the compartment sealing member sealingly engages the humidification chamber when the humidification chamber is in the operating position.~~

~~73. The apparatus according to any one of claims 70 to 72 when appended to claim 60, wherein the sealing assembly includes flow path sealing members that seal a connection between the outlet port of the humidification compartment and the chamber inlet when the humidification chamber is in the operating position.~~

~~74. The apparatus according to any one of claims 70 to 72 when appended to claim 61, wherein the sealing assembly includes flow path sealing members that seal between~~

~~the inlet port of the compartment and the chamber outlet when the humidification chamber is in the operating position.~~

~~75. The apparatus according to any one of claims 55 to 74, wherein the user can operate the actuator by applying a first pressing force to the humidification chamber which moves the humidification chamber from the releasing position into the operating position.~~

~~76. The apparatus according to claim 75, wherein the actuator can be operated by the user to move the humidification chamber from the operating position to the releasing position by applying a second pressing force to the humidification chamber which moves the humidification chamber inwardly of the operating position, and then removing the second pressing force, and once the second pressing force has been removed, the actuator is operable to move the humidification chamber from the operating position to the releasing position.~~

~~77. The apparatus according to any one of claims 55 to 76, wherein the actuator is a powered actuator, in which the actuator can be operated by a controller such as a button, switch or control knob that controls the movement of the movement of the humidification chamber between the operating position and the releasing position.~~

~~78. The apparatus according to any one of claims 55 to 77, wherein the apparatus has at least one first coupling device that acts between the humidification compartment and the humidification chamber, and is operable to releasably lock the humidification chamber in the operating position.~~

~~79. The apparatus according to claim 78 when appended to claim 75 or 76, wherein the first pressing force moves the humidification chamber from the releasing position to the operating position and activates the first coupling device to releasably lock the humidification chamber in the operating position.~~

~~80. The apparatus according to claim 79, wherein the first pressing force moves the humidification chamber inwardly of the operating position to activate the first coupling device, and when the first pressing force has been removed, the actuator can cause the humidification chamber to move to the operating position in which the humidification chamber is releasably locked.~~

81. The apparatus according to any one of claims 78 to 80, wherein the first coupling device is unlocked by action of the second pressing force moving the humidification chamber inwardly of the operating position and the second pressing force is then removed.

82. The apparatus according to any one of claims 78 to 80, wherein the first coupling device has a movable locking member and a biasing member that biases the locking member toward a neutral position, and a fixed cam having working surfaces that are engaged by the locking member and moves the locking member away from the neutral position as the humidification chamber moves from the releasing position toward the operating position, and the working surfaces has a recessed surface that receives the locking member under the action of the biasing member when the humidification chamber is in the operating position, and the locking member can be dislodged from the recessed surface by moving the humidification chamber inwardly into the humidification compartment, wherein the fixed cam is located on an inner surface of the humidification compartment, and the locking member is connected to the humidification chamber.

83. The apparatus according to claim 82, wherein the recessed surface of the fixed cam faces in an inward direction of the humidification chamber.

84. The apparatus according to claim 82, wherein the first coupling device has a movable locking member and a biasing member that biases the locking member toward a neutral position, and a fixed cam having working surfaces that are engaged by the locking member and moves the locking member away from the neutral position as the humidification chamber moves from the releasing position toward the operating position, and the working surfaces has a recessed surface that receives the locking member when the humidification chamber is in the operating position, and the locking member can be dislodged from the recessed surface by moving the humidification chamber inwardly into the humidification compartment, and wherein the locking member may be located on an inner surface of the humidification compartment, and the fixed cam may be connected to the humidification chamber.

85. The apparatus according to claim 84, wherein the recessed surface faces in an outward direction of the humidification compartment.

86. The apparatus according to any one of claims 82 to 85, wherein the biasing member provides a resistive force that increases as the locking member slides over the

~~fixed cam as the humidification chamber moves toward the operating position, which at least in part holds the locking member in the recessed surface.~~

~~87. The apparatus according to any one of claims 82 to 86, wherein the actuator assists in holding the locking member in the recessed surface of the fixed cam by the actuator applying an active force or resistance to humidification chamber in a direction from the releasing position to the operating position.~~

~~88. The apparatus according to any one of claims 55 to 87, wherein the apparatus includes a powered device that heats water in the humidification chamber to increase or control humidification of the gas stream.~~

~~89. The apparatus according to claim 88, wherein the powered device includes a heater element that thermally engages the humidification chamber.~~

~~90. The apparatus according to any one of claims 78 to 87 when appended to claim 58, wherein the actuator can apply a force to the humidification chamber in a direction from the operating position toward the releasing position, and the first coupling device can secure the humidification chamber in position in the humidification compartment against the force, thereby pressing the heater element against the heater base.~~

~~91. The apparatus according to any one of claims 55 to 90, wherein the humidification compartment has a heater element for thermally engaging a heater base of the humidification chamber, and the apparatus has at least one first coupling device that acts between the humidification chamber and the humidification compartment and is operable to releasably lock the humidification chamber in the operating position, and wherein the actuator applies an active force to the humidification chamber whilst the first coupling device secures the humidification chamber in the operating position against the active force, thereby pressing the heater element against the heater base.~~

~~92. The apparatus according to claim 88, wherein the powered device includes an induction generator in the humidification compartment for operating a heater base of the humidification chamber that heats on exposure to energy from the induction generator for heating the water in the humidification chamber.~~