CLAIMS

1. An indexed drug containment device assembly for a drug delivery and regulation device, the indexed drug containment device assembly comprising:

a gas canister containing an active pharmaceutical ingredient and an inactive gas carrier for delivery to a patient in need thereof via the drug delivery and regulation device,

a housing and a spring biased needle valve, at least a portion of the spring biased needle valve being disposed within the housing and regulating fluid flow from the gas canister by actuating along a longitudinal axis of the gas canister, and,

a first indexed member integral to the housing and ~~comprising~~ being a first ~~arcuate~~ opening and a second ~~arcuate~~ opening that extend ~~arcuately~~ about, and on at least a portion of opposing sides of, the longitudinal axis of the gas canister, the first and second ~~arcuate~~ openings having at least one of different axial widths or misaligned mid planes, the first indexed member adapted to complementarily engage a second indexed member of the drug delivery and regulation device to provide sufficient engagement for actuation of the spring biased needle valve ~~and so that the indexed drug containment device assembly seats into, and is removable from, the drug delivery and regulation device~~ when aligned via a relative movement that is perpendicular to the longitudinal axis~~; and~~

~~wherein, when complementarily engaged, the indexed drug containment device assembly aligns, seals, opens, and is secured in the drug delivery and regulation device in a single movement~~.

2. An indexed drug containment device assembly for a drug delivery and regulation device, the indexed drug containment device assembly comprising:

a gas canister containing an active pharmaceutical ingredient and an inactive gas carrier for delivery to a patient in need thereof via the drug delivery and regulation device, the gas canister having a valve regulating fluid flow from the gas canister by actuating along a longitudinal axis of the gas canister;

a housing and a valve, the valve disposed within the housing~~encasing at least a portion of the valve~~, the housing having a first indexed member integral to the housing; and

the first indexed member ~~comprising~~ being a first ~~arcuate~~ opening and a second ~~arcuate~~ opening that extend ~~arcuately~~ about, and on at least a portion of opposing sides of, the

longitudinal axis of the gas canister, the first and second ~~arcuate~~ openings having at least one of different axial widths or misaligned mid planes, the first indexed member is adapted to complementarily engage a second indexed member of the drug delivery and regulation device to provide sufficient engagement for actuation of the valve ~~and so that the indexed drug containment device assembly seats into, and is removable from, the drug delivery and regulation device~~ when aligned via a relative movement that is perpendicular to the longitudinal axis~~; and~~

~~wherein, when complementarily engaged, the indexed drug containment device assembly aligns, seals, opens, and is secured in the drug delivery and regulation device in a single movement~~.

3. An indexed drug containment device assembly for a drug delivery and regulation device, the indexed drug containment device assembly comprising:

a gas canister having a valve regulating flow of an active pharmaceutical ingredient contained in the gas canister, for delivery to a patient in need thereof via the drug delivery and regulation device, by actuating along a longitudinal axis of the gas canister;

a housing and a valve, the valve disposed within the housing ~~encasing at least a portion of the valve~~, the housing having a first indexed member;

the first indexed member ~~comprising~~ being a first ~~arcuate~~ opening and a second ~~arcuate~~ opening that extend ~~arcuately~~ about, and on at least a portion of opposing sides of, the longitudinal axis of the gas canister, the first and second ~~arcuate~~ openings having at least one of different axial widths or misaligned mid-planes, the first indexed member adapted to complementarily engage a second indexed member of the drug delivery and regulation device when aligned.

4. The assembly of claim 3, wherein the first indexed member is adapted to complementarily engage a second indexed member of the drug delivery and regulation device to provide sufficient engagement for actuation of the valve ~~and so that the indexed drug containment device assembly seats into, and is removable from, the drug delivery and regulation device~~ when aligned via a relative movement that is perpendicular to the longitudinal axis.

~~5. The assembly of claim 3, wherein, when complementarily engaged, the indexed drug containment device assembly aligns, seals, opens, and is secured in the drug delivery and regulation device in a single movement.~~

~~6.~~5. The assembly of claim 3, wherein the active pharmaceutical ingredient comprises at least one of:

nitric oxide, with a concentration in the range of approximately 50 ppm to 10,000 ppm,

carbon monoxide, with a concentration in the range of approximately 500 ppm to 20,000 ppm, and,

a chalcogenide compound,

wherein the gas canister also contains an inactive carrier gas comprising at least one of N_2 or O_2.

~~7.~~6. The assembly of claim 3, wherein the first ~~arcuate~~ opening is directly opposite from the second ~~arcuate~~ opening.

~~8.~~7. The assembly of claim 3, wherein, when the first and second indexed members are complementarily engaged, the indexed drug containment device assembly aligns, seals, opens, and is secured in the drug delivery and regulation device in a single movement.

~~9.~~8. The assembly of claim 3, wherein the first and second ~~arcuate~~ openings have different axial widths and misaligned mid-planes.

~~10.~~9. The assembly of claim 3, wherein the complementary engagement of the first and second indexed members provides sufficient engagement to permit actuation of the valve.

~~11.~~10. The assembly of claim 3, wherein the indexed drug containment device assembly is removable from the drug delivery and regulation device via a relative movement that is perpendicular to the longitudinal axis.

~~12.~~11. The assembly of claim 3, further comprising a radio frequency identification device adapted to communicate with a radio frequency receiver.

~~13.~~12. The assembly of claim 3, wherein the first indexed member is configured to be a support enabling the indexed drug containment device assembly to be suspended vertically in the drug delivery and regulation device.

~~14.~~13. The assembly of claim 3, wherein first indexed member is configured to be a support permitting actuation of the valve along the longitudinal axis of the gas canister.

~~15.~~14. The assembly of claim 3, wherein the first indexed member is configured to be a support enabling suspending the indexed drug containment device assembly in in the drug delivery and regulation device and permitting actuation of the valve along the longitudinal axis of the gas canister.

~~16.~~15. The assembly of claim 3, wherein one or more of the first indexed member and the second indexed member have a surface that is configured to be an at least one support enabling the indexed drug containment device assembly to be seated in the drug delivery and regulation device and permitting actuation of the valve along the longitudinal axis of the gas canister.

~~17.~~16. An indexed drug delivery system comprising:

the assembly of claim 3; and

the drug delivery and regulation device comprising the second indexed member.

~~18.~~17. An indexed drug containment device assembly for a drug delivery and regulation device, the indexed drug containment device assembly comprising:

a gas canister having a valve regulating flow of an active pharmaceutical ingredient contained in the gas canister, for delivery to a patient in need thereof via the drug delivery and regulation device, by actuating along a longitudinal axis of the gas canister;

a housing and a valve, the valve disposed within the housing ~~encasing at least a portion of the valve, the housing and~~ having a first indexing member,

the first indexing member being adapted to complementarily engage a second indexed member of the drug delivery and regulation device to (i) ensure the gas canister is at least one of the

desired gas canister and containing the desired therapeutic gas drug, (ii) suspend the indexed drug containment device assembly in the drug delivery and regulation device, and (iii) provide sufficient engagement to permit actuation of the valve.

~~19.~~18. The assembly of claim ~~18~~17, wherein the first and second indexed members are adapted to complementarily engage when aligned via a relative movement that is perpendicular to the longitudinal axis of the gas canister.

~~20.~~19. The assembly of claim ~~18~~17, wherein the first indexing member comprises a first ~~arcuate~~ opening and a second ~~arcuate~~ opening ~~arcuately~~ about, and on at least a portion of opposing sides of, the longitudinal axis of the portable gas canister, the first and second ~~arcuate~~ openings having at least one of different axial widths or misaligned mid planes.