~~AMENDED CLAIMS~~
~~received by the International Bureau on 09 February 2021 (09.02.2021)~~

~~Claims~~

Claims

1. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end, and includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a shroud disposed within the handheld housing, wherein the second end of the flowpath is disposed within the shroud when the shroud is in a first position; and

a fluid source configured to release a pressurized second fluid;

wherein the first end of the flowpath is in fluid communication with the container and the second end of the flowpath is extendable from the shroud in a direction along or parallel to the transverse axis when the shroud is moved towards a second direction.

2. The handheld auto-injector of claim 1, wherein the shroud is configured to move relative to the handheld housing to actuate the fluid source in response to an external mechanical force applied by a user, thereby releasing the pressurized second fluid and extending the second end of the flowpath out from the shroud.

3. The handheld auto-injector of claim 2, wherein the shroud is configured to move relative to the handheld housing to cease actuation of the fluid source, thereby causing a loss of pressure of the pressurized second fluid and retraction of the second end of the flowpath into the shroud.

4. The handheld auto-injector of claim 1, wherein the shroud is coupled to the fluid source by a movable rod, such that the shroud is configured to move the movable rod into contact with the fluid source to release the pressurized second fluid.

~~AMENDED CLAIMS~~
~~received by the International Bureau on 09 February 2021 (09.02.2021)~~

5. The handheld auto-injector of claim 1, wherein the shroud is fluidly coupled to a venting mechanism by a movable rod;

wherein the movable rod is configured to move the shroud relative to the handheld housing in response to the venting mechanism receiving the pressurized second fluid from the fluid source, thereby extending the second end of the flowpath out from the shroud.

6. The handheld auto-injector of claim 5, wherein the movable rod is configured to move the shroud relative to the handheld housing in response to a loss of pressure of the pressurized second fluid in the venting mechanism, thereby retracting the second end of the flowpath into the shroud.

~~[Claim 1]~~7. An auto-injector, comprising:

a housing having a longitudinal axis and a transverse axis, the housing having a shorter dimension along the transverse axis than along the longitudinal axis, wherein the transverse axis is perpendicular to the longitudinal axis;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis and being movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position;

a shuttle coupled to the container and configured to move with the container;

a gear rotatable by longitudinal movement of the shuttle and the container; and

a driver coupled to the second end of the flowpath, the driver being transversely movable in the auto-injector by rotation of the gear;

the container further including a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the housing in a direction along or parallel to the transverse axis through an opening in the housing.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

[Claim 2] The auto-injector of claim 1, further including a fluid source configured to release a pressurized second fluid, wherein:

the container is movable from the first position to the second position by the release of the pressurized second fluid from the fluid source; and

release of the pressurized second fluid from the fluid source urges the plunger from the first end toward the second end of the container to expel the first fluid from the container into the flowpath.

[Claim 3] The auto-injector of claim 2, wherein:

the container includes a seal at the second end of the container; and

in the first position, a gap is disposed between the seal and the first end of the flowpath.

[Claim 4] The auto-injector of claim 3, wherein the first end of the flowpath pierces through the seal and enters the container upon movement of the container into the second position.

[Claim 5] The auto-injector of claim 3, wherein the container is movable from a second position to a third position, upon loss of pressure from the pressurized second fluid to the container.

[Claim 6] The auto-injector of claim 5, wherein the third position is the same as the first position.

[Claim 7] The auto-injector of claim 5, wherein the third position is different than the first position.

[Claim 8] The auto-injector of claim 5, further including a first resilient member coupled to the container, wherein:

movement of the container from the first position to the second position compresses the first resilient member; and

the compressed first resilient member expands to move the container and the shuttle to the third position, rotating the gear and causing the driver and the second end of

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

the flowpath to retract transversely within the housing, when a force of the first resilient member exceeds a pressure generated by the pressurized second fluid upon loss of pressure from the pressurized second fluid.

[Claim 12]8. An auto-injector, comprising:

a body housing a conduit;

a fluid source configured to provide pressurized gas into the conduit;

a container fluidly connected to the conduit, the container configured to contain a medicament and including a plunger, wherein the container is configured to expel the medicament upon application of pressure from the pressurized gas to the plunger;

a pressure restrictor configured to restrict flow of the pressurized gas in the conduit, the pressure restrictor defining a high pressure flow area and a low pressure flow area of the conduit;

a valve including a valve inlet and a valve outlet, wherein the valve inlet is fluidly coupled to the conduit, and wherein the valve is configured to regulate flow of the pressurized gas from the conduit to the valve outlet; and

a flowpath extendable from the body and configured to deliver the medicament from the container to a patient,

wherein a direction in which the container expels the medicament is offset from a direction in which the flowpath extends from the body.

[Claim 13] The auto-injector of claim 12, wherein the high pressure flow area and the low pressure flow area are separated from one another, the valve inlet being in fluid communication with the high pressure flow area and the valve outlet being in fluid communication with the low pressure flow area;

wherein the pressurized gas from the fluid source is received in the valve at the high pressure flow area through the valve inlet.

[Claim 14] The auto-injector of claim 12, wherein the medicament includes a monoclonal antibody.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

[Claim 15] The auto-injector of claim 12, wherein the pressure restrictor includes one of a porous material or a serpentine channel.

[Claim 16] The auto-injector of claim 12, wherein a direction in which the container expels the medicament is approximately perpendicular to a direction in which the flowpath extends from the body.

[Claim 17] The auto-injector of claim 12, wherein the container is fluidly connected to the low pressure flow area of the conduit, and the high pressure flow area of the conduit is fluidly connected to the valve inlet.

[Claim 18] The auto-injector of claim 12, wherein the container is movable from a first container position to a second container position, and further comprising a spring mechanism configured to extend the flowpath from the body when the container is in the second container position.

[Claim 19] The auto-injector of claim 12, wherein the valve is configured to allow flow of the pressurized gas from the conduit to the valve outlet after the container expels at least a portion of the medicament, and wherein application of pressure from pressurized gas flowing to the valve outlet is configured to actuate an additional mechanism of the auto-injector.

[Claim 20] The auto-injector of claim 19, wherein the additional mechanism is a flowpath retraction mechanism.

[Claim 21] The auto-injector of claim 20, wherein the flowpath retraction mechanism includes a rod movable by the pressurized gas flowing through the valve outlet, wherein the rod is configured to cause the flowpath to retract after being moved by a first distance.

[Claim 22] The auto-injector of claim 12, further including:

a piston disposed in the valve outlet, and movable from a first position to a second

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

position; and

a secondary channel coupled to the fluid source and to the valve outlet, wherein:

the secondary channel is sealed from the valve outlet by the piston when the piston is in the first position; and

the secondary channel is fluidly connected to the valve outlet when the piston is in the second position, such that pressurized gas flows from the fluid source, through the secondary channel, and through the valve outlet.

[Claim 23] The auto-injector of claim 12, wherein the valve is configured to prevent flow of the pressurized gas from the conduit to the valve outlet while the container is expelling medicament.

[Claim 24]9. An auto-injector, comprising:

a conduit;

a fluid source configured to provide pressurized gas into the conduit;

a container fluidly connected to the conduit, the container housing a plunger, wherein the plunger is movable from a first position to a second position upon application of pressure from the pressurized gas;

a pressure restrictor configured to restrict flow of the pressurized gas through the conduit, the pressure restrictor defining a high pressure flow area and a low pressure flow area of the conduit; and

a valve, including:

a first valve inlet fluidly coupling the high pressure flow area of the conduit to a first valve cavity;

a second valve inlet fluidly coupling the low pressure flow area of the conduit to a second valve cavity; and

a valve outlet,

wherein the valve is configured to regulate flow of the pressurized gas from the low pressure flow area of the conduit to the valve outlet.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

[Claim 25] The auto-injector of claim 24, wherein the first valve cavity and the second valve cavity are separated by a diaphragm having a flexible body that is configured to at least partially deform in response to a pressure difference within the valve between the first valve cavity and the second valve cavity.

[Claim 26] The auto-injector of claim 25, wherein the first valve cavity and the second valve cavity are separated by the diaphragm held in a stretched configuration, and wherein the diaphragm is held in place by at least one of a clamp or a groove.

[Claim 27] The auto-injector of claim 24, wherein the valve is configured to allow flow of the pressurized gas from the low pressure flow area of the conduit to the valve outlet when a fluid pressure in the low pressure flow area of the conduit is within a threshold range of a fluid pressure in the high pressure flow area of the conduit.

[Claim 28] The auto-injector of claim 24, wherein the valve outlet is fluidly connected to a flowpath retraction mechanism configured to be actuated by pressurized fluid flowing through the valve outlet.

[Claim 29] The auto-injector of claim 24, wherein the valve outlet is fluidly connected to a ventilation aperture.

[Claim 30]10. An auto-injector, comprising:

a carrier,

a needle;

a driver coupled to the needle, the driver being slidable relative to the carrier between a first position, a second position, and a third position;

a shuttle configured to move the driver between the first position, the second position, and the third position; and

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

an indicator couplable to the shuttle, a portion of the indicator being visible from exterior of the auto-injector, the auto-injector providing via the shuttle and the indicator a first indication corresponding to the first position of the driver, a second indication corresponding to the second position of the driver, and a third indication corresponding to the third position of the driver.

[Claim 31]11. An auto-injector, comprising:

a carrier,

a container comprising a medicament;

a sleeve coupled to the container, the sleeve comprising a longitudinally-extending slot and a laterally or circumferentially-extending slot extending from the longitudinally-extending slot;

a needle having a first end configured to extend out of the auto-injector, and a second end configured to extend into the container, wherein, in a first state of the auto-injector, the second end of the needle and the container are not in fluid communication with one another;

a connector housing coupled to the second end of the needle, the connector housing comprising a boss, wherein, in the first state of the auto-injector, the boss abuts against a portion of the sleeve, preventing movement of the sleeve and the connector housing relative to one another; and

a driver coupled to the needle, the driver being slidable relative to the carrier between a first position, a second position, and a third position; wherein

in a transition from the first state to a second state of the auto-injector, the driver moves the first end of the needle out of the auto-injector to the second position, and rotates the connector housing, in a first rotational direction, so that the boss is able to extend through the longitudinally-extending slot;

in the second state, the second end of the needle extends into and is in fluid communication with the container; and

in a transition from the second state to a third state of the auto-injector, the driver moves to the third position, and rotates the connector housing, in a second rotational direction opposite of the first rotational direction, so that the boss is able to extend through the laterally or circumferentially-extending slot.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

[Claim 32] The auto-injector of claim 8, further including a button that is depressible from an unactuated position to an actuated position, and a second resilient member that is compressed when the button is in the unactuated position, and expanded when the button is depressed to the actuated position.

[Claim 33] The auto-injector of claim 32, wherein expansion of the second resilient member actuates the fluid source.

[Claim 34] The auto-injector of claim 1, wherein the auto-injector is a handheld injector configured to complete an injection procedure in 30 seconds or less.

[Claim 35] The auto-injector of claim 26, wherein the diaphragm is configured to extend into the second valve cavity and away from the first valve cavity when the pressure within the high pressure flow area exceeds the pressure within the low pressure flow area;

wherein the flexible body is configured to push against the valve outlet to seal the second valve cavity when the diaphragm extends into the second valve cavity.

[Claim 36] The auto-injector of claim 26, wherein the diaphragm includes a rim extending about a periphery of the flexible body, wherein the diaphragm includes a greater thickness along the rim relative to a remaining portion of the flexible body.

[Claim 37] The auto-injector of claim 36, wherein the clamp or the groove holds the rim in place relative to the valve such that the remaining portion of the flexible body disposed radially inward of the rim is movable relative to the valve.

[Claim 38] The auto-injector of claim 36, wherein the diaphragm includes a raised portion at a center position of the flexible body, such that the rim extends about the raised portion;

wherein the diaphragm includes a greater thickness at the raised portion relative to a remaining portion of the flexible body.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

[Claim 39] The auto-injector of claim 38, wherein the raised portion includes one or more indentations extending radially inward from an outer circumferential face of the raised portion.

[Claim 40] The auto-injector of claim 30, wherein the shuttle is movably coupled to the driver via a rotatable gear, the shuttle is configured to move the driver from the first position to the second position in response to rotating the rotatable gear in a first rotational direction, and to move the driver from the second position to the third position in response to rotating the rotatable gear in a second rotational direction that is opposite of the first rotational direction.

[Claim 41] The auto-injector of claim 30, wherein the shuttle is movable relative to the indicator in some configurations, and movable with the indicator in other configurations.

[Claim 42] The auto-injector of claim 41, wherein the first indication, the second indication, and the third indication of the indicator each corresponds to a different position of the shuttle relative to the carrier.

[Claim 43]12. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis, wherein the handheld auto-injector is configured to complete an injection procedure in 30 seconds or less;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis and being movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position; and

the container further including a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

13. An auto-injector, comprising:

a housing having a longitudinal axis and a transverse axis, the housing having a shorter dimension along the transverse axis than along the longitudinal axis, wherein the transverse axis is perpendicular to the longitudinal axis;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis and being movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position;

a shuttle coupled to the container and configured to move with the container;

a gear rotatable by longitudinal movement of the shuttle and the container; and

a driver coupled to the second end of the flowpath, the driver being transversely movable in the auto-injector by rotation of the gear;

the container further including a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the housing in a direction along or parallel to the transverse axis through an opening in the housing.

14. An auto-injector, comprising:

a body housing a conduit;

a fluid source configured to provide pressurized gas into the conduit;

a container fluidly connected to the conduit, the container configured to contain a medicament and including a plunger, wherein the container is configured to expel the medicament upon application of pressure from the pressurized gas to the plunger;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a pressure restrictor configured to restrict flow of the pressurized gas in the conduit, the pressure restrictor defining a high pressure flow area and a low pressure flow area of the conduit;

a valve including a valve inlet and a valve outlet, wherein the valve inlet is fluidly coupled to the conduit, and wherein the valve is configured to regulate flow of the pressurized gas from the conduit to the valve outlet; and

a flowpath extendable from the body and configured to deliver the medicament from the container to a patient,

wherein a direction in which the container expels the medicament is offset from a direction in which the flowpath extends from the body.

15. An auto-injector, comprising:

a conduit;

a fluid source configured to provide pressurized gas into the conduit;

a container fluidly connected to the conduit, the container housing a plunger, wherein the plunger is movable from a first position to a second position upon application of pressure from the pressurized gas;

a pressure restrictor configured to restrict flow of the pressurized gas through the conduit, the pressure restrictor defining a high pressure flow area and a low pressure flow area of the conduit; and

a valve, including:

a first valve inlet fluidly coupling the high pressure flow area of the conduit to a first valve cavity;

a second valve inlet fluidly coupling the low pressure flow area of the conduit to a second valve cavity; and

a valve outlet,

wherein the valve is configured to regulate flow of the pressurized gas from the low pressure flow area of the conduit to the valve outlet.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

16. An auto-injector, comprising:

a carrier,

a needle;

a driver coupled to the needle, the driver being slidable relative to the carrier between a first position, a second position, and a third position;

a shuttle configured to move the driver between the first position, the second position, and the third position; and

an indicator couplable to the shuttle, a portion of the indicator being visible from exterior of the auto-injector, the auto-injector providing via the shuttle and the indicator a first indication corresponding to the first position of the driver, a second indication corresponding to the second position of the driver, and a third indication corresponding to the third position of the driver.

17. An auto-injector, comprising:

a carrier,

a container comprising a medicament;

a sleeve coupled to the container, the sleeve comprising a longitudinally-extending slot and a laterally or circumferentially-extending slot extending from the longitudinally-extending slot;

a needle having a first end configured to extend out of the auto-injector, and a second end configured to extend into the container, wherein, in a first state of the auto-injector, the second end of the needle and the container are not in fluid communication with one another;

a connector housing coupled to the second end of the needle, the connector housing comprising a boss, wherein, in the first state of the auto-injector, the boss abuts against a portion of the sleeve, preventing movement of the sleeve and the connector housing relative to one another; and

a driver coupled to the needle, the driver being slidable relative to the carrier between a first position, a second position, and a third position; wherein

in a transition from the first state to a second state of the auto-injector, the driver moves the first end of the needle out of the auto-injector to the second position, and rotates the connector housing, in a first rotational direction, so that the boss is able to extend through the longitudinally-extending slot;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

in the second state, the second end of the needle extends into and is in fluid communication with the container; and

in a transition from the second state to a third state of the auto-injector, the driver moves to the third position, and rotates the connector housing, in a second rotational direction opposite of the first rotational direction, so that the boss is able to extend through the laterally or circumferentially-extending slot.

18. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis, wherein the handheld auto-injector is configured to complete an injection procedure in 30 seconds or less;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis and being movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position; and

the container further including a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

19. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end; and

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

20. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position.

21. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a venting mechanism including a movable rod having a longitudinal length defined between a first portion and a second portion, wherein the first portion extends into the container at the first end and is coupled to the plunger;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position.

22. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a venting mechanism including a first tubular member and a second tubular member, wherein the first tubular member is at least partially disposed within the second tubular member, and the second tubular member is at least partially disposed within the container;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position.

23. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a resilient member coupled to the container;

a component configured to move within the handheld auto-injector to compress the resilient member in response to receiving a second fluid;

a shuttle coupled to the container;

a gear; and

a driver coupled to the second end of the flowpath, the driver being transversely movable in the auto-injector by rotation of the gear;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

24. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a shuttle coupled to the container and configured to move with the container;

a gear rotatable by longitudinal movement of the shuttle and the container;

a driver coupled to the second end of the flowpath, the driver being transversely movable in the handheld auto-injector by rotation of the gear;

a fluid source configured to release a pressurized second fluid, wherein:

the container is movable from a first position to a second position by the release of the pressurized second fluid from the fluid source;

release of the pressurized second fluid from the fluid source urges the plunger from the first end towards the second end of the container to expel the first fluid from the container into the flowpath; and

the container is movable from the second position to a third position upon a loss of pressure from the pressurized second fluid to the container;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

25. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a peel tab coupled to an exterior of the handheld housing at the opening, thereby closing the opening;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

26. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

an actuator configured to move the flowpath relative to the handheld housing;

wherein the actuator and the flowpath are longitudinally offset from a central portion of the handheld housing, with the actuator positioned above the flowpath along an opposing surface of the handheld housing;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

27. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a rail structure coupled to the first end of the container with at least one seal positioned between the rail structure and the container, wherein the rail structure is in fluid communication with a fluid source such that a pressurized fluid from the fluid source is received within a cavity chamber formed between the rail structure and the first end of the container;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position.

28. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the first end of the container is sealed with at least one gasket coupled to the container along an exterior of the first end.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

29. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a first container configured to enclose a first fluid, the first container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the first container includes a first plunger configured to move from the first end toward the second end of the first container to expel the first fluid from the first container into the flowpath;

a second container configured to enclose a second fluid that is different than the first fluid; and

a second plunger configured to move from a first end of the second container towards a second end of the second container to expel the second fluid from the second container into the flowpath;

wherein the first end of the flowpath is insertable into the first container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the first container is movable from a first position to a second position along or parallel to the longitudinal axis, the first container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position.

30. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a fluid source configured to release a pressurized fluid, wherein the fluid source is attached to the first end of the container such that the fluid source is configured to release the pressurized fluid directly into the container at the first end;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

31. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a shuttle coupled to the container and configured to move with the container;

a resilient member coupled to the shuttle; and

a movable rod, wherein the movable rod is configured to compress the resilient member, thereby moving the shuttle and the container to the second position;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position.

32. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a shuttle coupled to the container and configured to move with the container;

a fluid source configured to release a pressurized second fluid;

a resilient member coupled to a first end of the shuttle; and

a movable rod integral with or coupled to a second end of the shuttle that is opposite of the first end, the movable rod being in fluid communication with the fluid source;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing; and

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position; and

wherein the movable rod is configured to move the shuttle and the container to the second position, thereby compressing the resilient member, in response to the pressurized second fluid displacing the movable rod.

33. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a fluid source configured to release a pressurized second fluid; and

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a shroud disposed within the handheld housing;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the container is movable from a first position to a second position along or parallel to the longitudinal axis, the container being fluidly isolated from the flowpath in the first position and fluidly connected to the flowpath in the second position; and

wherein the second end of the flowpath is disposed within the shroud when the container is in the first position.

34. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing;

wherein the container includes a seal coupled to the second end of the container, the seal having an interior cavity that is in fluid communication with the container.

35. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a housing coupled to the first end the container for sealing the first end of the container;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

36. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a fluid source configured to release a pressurized second fluid;

an actuator coupled and movable relative to the handheld housing; and

a resilient member coupled to the actuator;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

37. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

an actuator coupled and movable relative to the handheld housing;

a movable rod;

a fluid canister; and

a resilient member;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

38. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a sterile connector coupled to the first end of the flowpath and the second end of the container;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

39. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a shroud that is coupled and moveable relative to a bottom surface of the handheld housing, wherein the shroud includes an opening that is aligned with the opening of the handheld housing;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

40. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

an actuator coupled to a first surface of the handheld housing, wherein the handheld housing includes a window positioned along a second surface of the handheld housing;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

41. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a removable seal coupled to a bottom surface of the handheld housing, wherein the bottom surface defines an interface configured to contact a skin surface;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

42. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing has a shorter dimension along the longitudinal axis than along the transverse axis;

a flowpath having a first end and a second end; and

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

43. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a pull tab coupled to a bottom surface of the handheld housing;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

44. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a window positioned along an exterior of the handheld housing; and

an indicator shield disposed within the handheld housing and visible from the exterior via the window;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

45. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a window positioned along an exterior of the handheld housing, wherein the window is tinted, covered, or frosted based on a volume of the first fluid stored in the container

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

46. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a shroud coupled to a bottom surface of the handheld housing, wherein the shroud includes a visual marking that is indicative of a current state of the handheld auto-injector;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

47. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

an indicator having a plurality of panels that each include a visual marking that is indicative of a current state of the handheld auto-injector;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

48. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a flow restrictor positioned between a fluid source and the first end of the container, the fluid source is configured to release a pressurized second fluid toward the container to move the plunger from the first end to the second end of the container;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

AMENDED CLAIMS
received by the International Bureau on 09 February 2021 (09.02.2021)

49. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath; and

a shroud coupled to the handheld housing, the shroud is configured to retract into the handheld housing upon an application of force onto the shroud;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.

50. A handheld auto-injector, comprising:

a handheld housing having a longitudinal axis and a transverse axis that is perpendicular to the longitudinal axis, the handheld housing having a shorter dimension along the transverse axis than along the longitudinal axis;

a flowpath having a first end and a second end;

a container configured to enclose a first fluid, the container extending from a first end toward a second end along or parallel to the longitudinal axis, wherein the container includes a plunger configured to move from the first end toward the second end of the container to expel the first fluid from the container into the flowpath;

a connector coupled to the first end of the flowpath; and

a sleeve fixed to the second end of the container, wherein the connector is coupled and movable relative to the sleeve;

wherein the first end of the flowpath is insertable into the container and the second end of the flowpath is extendable from the handheld housing in a direction along or parallel to the transverse axis through an opening in the handheld housing.