[CLAIMS]

[Claim 1]

A chemical sampling apparatus comprising:

a casing having an internal space;

a plurality of sampling lines penetrating the casing and configured to supply chemicals to the internal space;

a plurality of on-off valves respectively installed in the plurality of sampling lines;

a first door configured to open or close a first inlet formed in the casing;

a bottle holding unit configured to seat or fix a sampling bottle loaded into the internal space through the first inlet;

a cap separating/coupling module configured to separate a cap from the sampling bottle disposed in the internal space or couple the cap to the sampling bottle;

a bottle transfer unit configured to transfer the bottle holding unit so that the sampling bottle passes the cap separating/coupling module and then is disposed below a discharge port of the sampling line;

a drain module for collecting chemicals discharged from the plurality of sampling lines; and

a control unit controlling the plurality of on-off valves to discharge a portion of the chemicals into the drain module before the chemicals are filled into the sampling bottle.

[Claim 2]

The chemical sampling apparatus of claim 1, comprising:

a second partition wall configured to divide the internal space into a first-first internal space and a first-second internal space; and

a second door configured to open or close a second inlet formed in the second

partition wall,

wherein the first-first internal space is connected to the first inlet, and the sampling line and the cap separating/coupling module are disposed in the first-second internal space.

[Claim 3]

The chemical sampling apparatus of claim 2, wherein the bottle holding unit comprises first and second bottle holding parts configured to hold the sampling bottle,

wherein the bottle transfer unit comprises a first bottle transfer part configured to transfer the first bottle holding part in a first direction, and a second bottle transfer part configured to transfer the second bottle holding part in a second direction, and

wherein the first bottle holding part is transferred to the cap separating/coupling module through the second inlet, and the second bottle holding part is transferred from the cap separating/coupling module to the sampling line.

[Claim 4]

The chemical sampling apparatus of claim 3, wherein the first direction and the second direction perpendicularly intersect each other.

[Claim 5]

The chemical sampling apparatus of claim 3, comprising:

a first partition wall configured to divide the internal space into a first internal space comprising the first-first internal space and the first-second internal space and a second internal space disposed below the first internal space,

wherein the first partition wall has a first guide slit extending in the first direction,

wherein the first bottle holding part comprises a pair of first grippers spaced apart from each other in the first direction, and a first interval adjusting part configured to adjust an interval between the pair of first grippers, and

wherein the pair of first grippers is disposed to penetrate the first guide slit, and the first interval adjusting part and the first bottle transfer part are disposed in the second internal space.

[Claim 6]

The chemical sampling apparatus of claim 3, comprising:

a third partition wall configured to divide the internal space into a first internal space comprising the first-first internal space and the first-second internal space and a third internal space disposed at one side of the first internal space,

wherein the third partition wall has a second guide slit extending in the second direction,

wherein the second bottle holding part comprises a pair of second grippers spaced apart from each other in the second direction, and a second interval adjusting part configured to adjust an interval between the pair of second grippers, and

wherein the pair of second grippers is disposed to penetrate the second guide slit, and the second interval adjusting part and the second bottle transfer part are disposed in the third internal space.

[Claim 7]

The chemical sampling apparatus of claim 2, comprising:

an input unit configured to receive one of a plurality of chemical supply sources respectively connected to the plurality of sampling lines,

wherein the control unit is configured to control the bottle holding unit, the cap separating/coupling module, the bottle transfer unit, the second door, and the on-off valve so that the sampling bottle is charged with the chemicals stored in the chemical supply source inputted from the input unit.

[Claim 8]

The chemical sampling apparatus of claim 7, comprising:

a drain module transfer unit configured to transfer the drain module to positions below the discharge ports of the plurality of sampling lines,

wherein the drain module comprises a plurality of inlet ports corresponding to the plurality of sampling lines.

[Claim 9]

The chemical sampling apparatus of claim 8, wherein the control unit controls the drain module transfer unit and the on-off valve so that the chemicals accommodated in the sampling line connected to the chemical supply source inputted from the input unit are discharged to the drain module before the sampling bottle is charged with the chemicals.

[Claim 10]

The chemical sampling apparatus of claim 8, wherein the drain module comprises:

a housing having the inlet port in an upper surface thereof; and

a discharge pipe configured to discharge the chemicals, introduced into an internal space of the housing through the inlet port, to the outside of the casing,

wherein the sampling line is provided in plural, and the plurality of sampling lines is respectively connected to different chemical supply sources,

wherein first valves are respectively installed in the plurality of sampling lines, and

wherein the plurality of sampling lines is connected to each other and has a single discharge port.

[Claim 11]

The chemical sampling apparatus of claim 1, wherein the cap separating/coupling module comprises:

a cap holding unit configured to hold the cap;

a cap rotating unit configured to rotate the cap holding unit; and

a cap lifting unit configured to move the cap holding unit in a vertical direction.

[Claim 12]

The chemical sampling apparatus of claim 11, wherein the cap holding unit comprises:

a first frame;

a plurality of grippers rotatably coupled to the first frame so as to support a lateral surface of the cap;

a second frame disposed on the first frame;

a plurality of connection links rotatably coupled to a part of each of the plurality of grippers and the second frame so that the plurality of grippers is coupled to or separated from the cap by a vertical rectilinear motion of the second frame; and

a frame lifting part coupled to the first frame and configured to transfer the second frame in the vertical direction.

[Claim 13]

The chemical sampling apparatus of claim 12, wherein the frame lifting part comprises:

a cylinder coupled to the first frame and a rotary shaft of the cap rotating unit; and

a piston disposed in a first cavity formed in the cylinder, configured to move in the vertical direction by a fluid supplied to the first cavity, and having a first rod that penetrates a lower wall of the cylinder and is coupled to the second frame.

[Claim 14]

The chemical sampling apparatus of claim 13, wherein the cap separating/coupling module comprises a lifting frame configured to be transferred in the vertical direction by the cap lifting unit, and the cap rotating unit is mounted on the lifting frame,

wherein the lifting frame comprises a cylinder holder configured to support the cylinder so that the cylinder is rotatable, and

wherein the cylinder holder has first and second fluid ports through which a fluid to be supplied to upper and lower sides of the first cavity flows in and out.