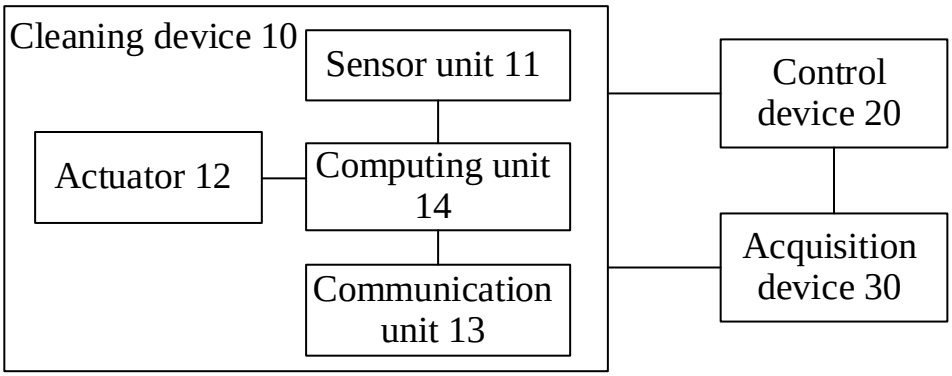
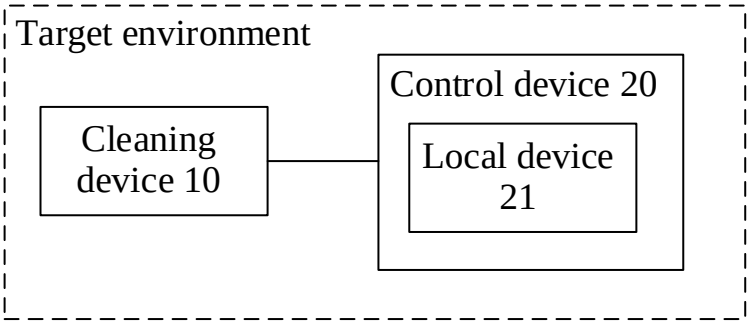
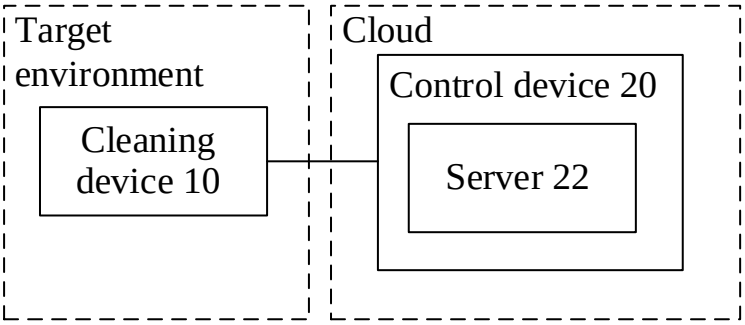

Cleaning device 10
Sensor unit 11
Actuator 12
Computing unit 14
Communication unit 13
Control device 20
Acquisition device 30

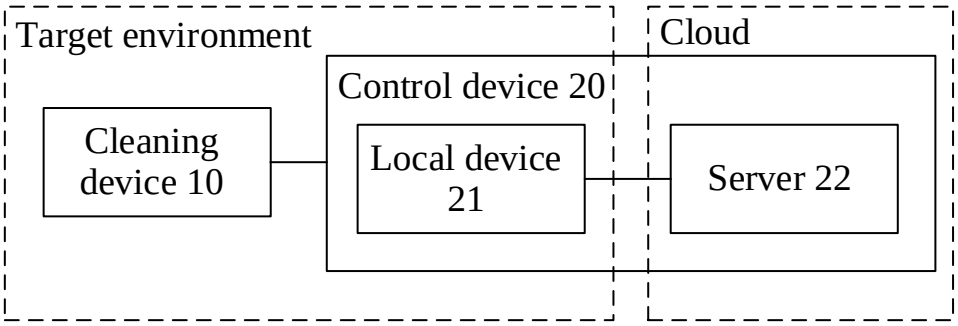
FIG. 1


Target environment
Control device 20
Cleaning device 10
Local device 21

(a)


Target environment
Cloud
Control device 20
Cleaning device 10
Server 22

(b)


Target environment
Cloud
Control device 20
Cleaning device 10
Local device 21
Server 22

(c)

FIG. 2

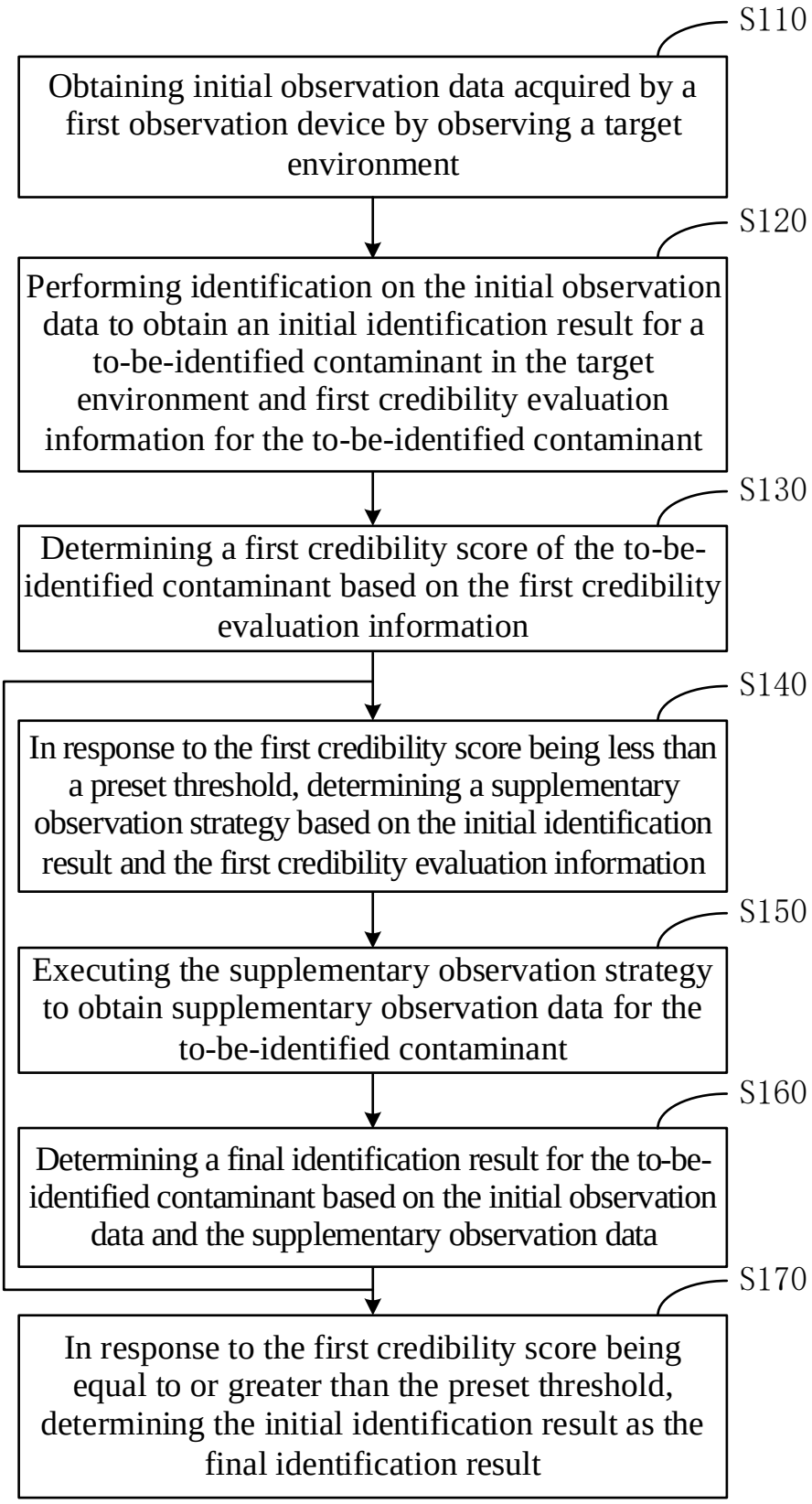

S110
Obtaining initial observation data acquired by a first observation device by observing a target environment
S120
Performing identification on the initial observation data to obtain an initial identification result for a to-be-identified contaminant in the target environment and first credibility evaluation information for the to-be-identified contaminant
S130
Determining a first credibility score of the to-be-identified contaminant based on the first credibility evaluation information
S140
In response to the first credibility score being less than a preset threshold, determining a supplementary observation strategy based on the initial identification result and the first credibility evaluation information
S150
Executing the supplementary observation strategy to obtain supplementary observation data for the to-be-identified contaminant
S160
Determining a final identification result for the to-be-identified contaminant based on the initial observation data and the supplementary observation data
S170
In response to the first credibility score being equal to or greater than the preset threshold, determining the initial identification result as the final identification result

FIG. 3

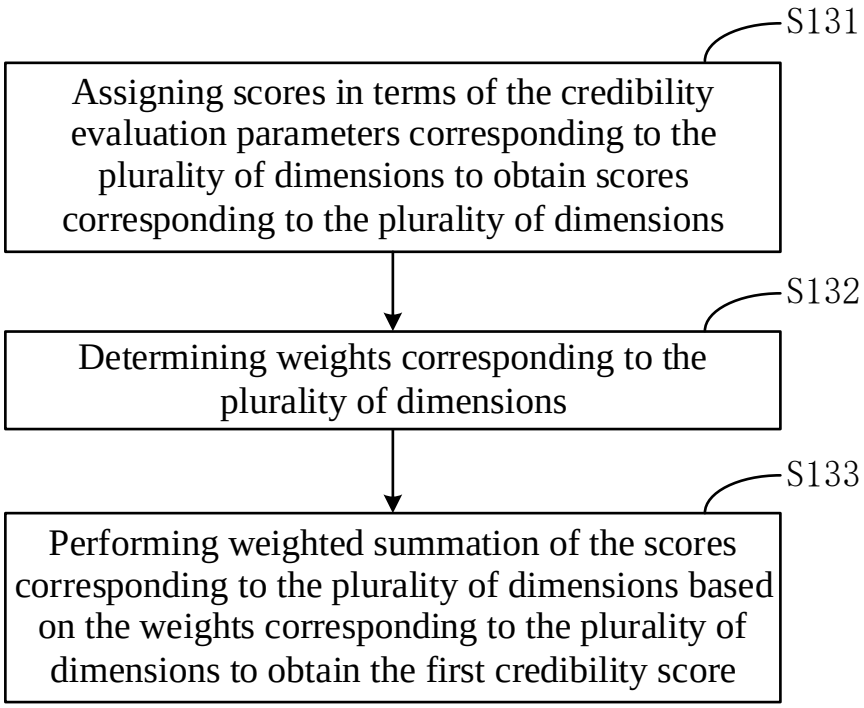

S131
Assigning scores in terms of the credibility evaluation parameters corresponding to the plurality of dimensions to obtain scores corresponding to the plurality of dimensions
S132
Determining weights corresponding to the plurality of dimensions
S133
Performing weighted summation of the scores corresponding to the plurality of dimensions based on the weights corresponding to the plurality of dimensions to obtain the first credibility score

FIG. 4

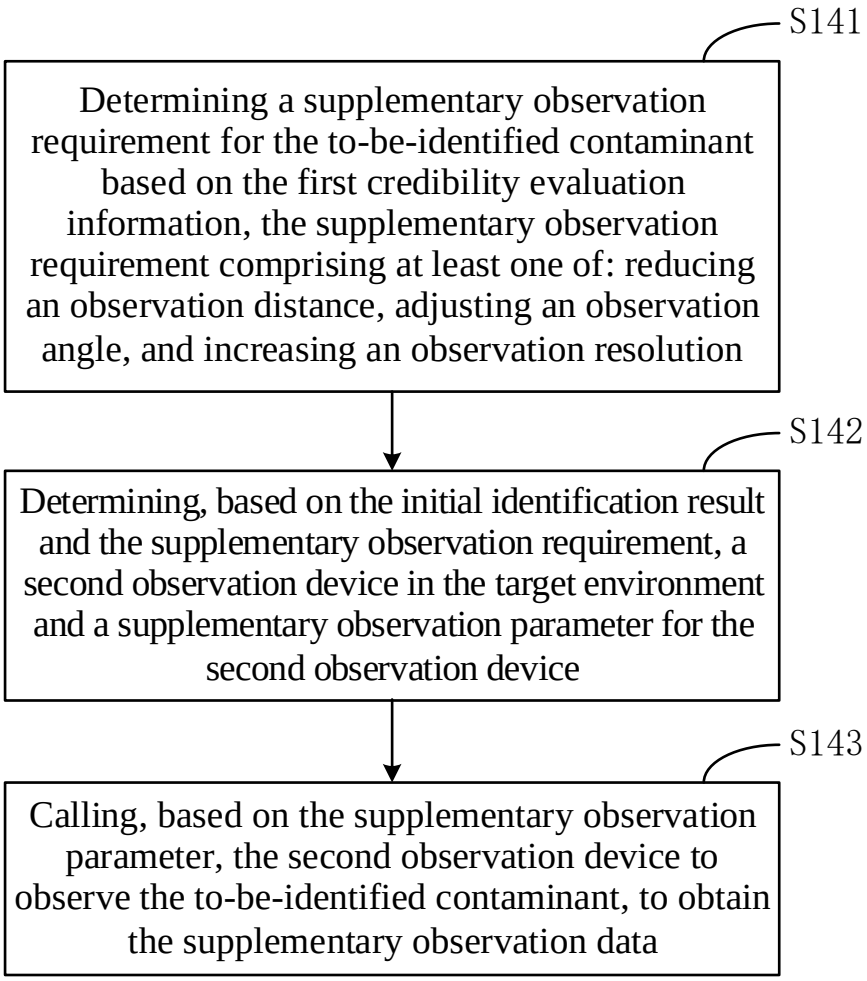

S141
Determining a supplementary observation requirement for the to-be-identified contaminant based on the first credibility evaluation information, the supplementary observation requirement comprising at least one of: reducing an observation distance, adjusting an observation angle, and increasing an observation resolution
S142
Determining, based on the initial identification result and the supplementary observation requirement, a second observation device in the target environment and a supplementary observation parameter for the second observation device
S143
Calling, based on the supplementary observation parameter, the second observation device to observe the to-be-identified contaminant, to obtain the supplementary observation data

FIG. 5

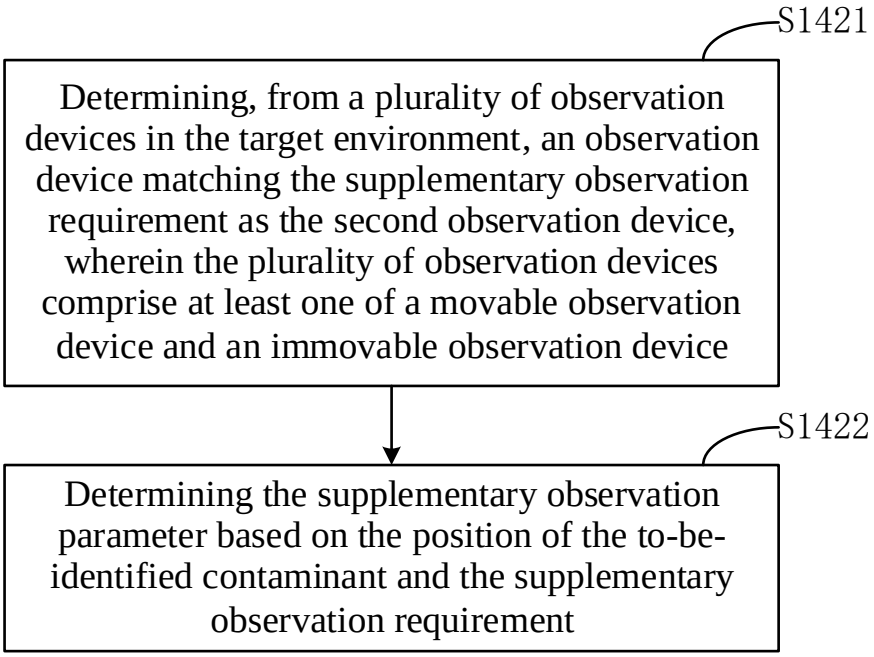

S1421
Determining, from a plurality of observation devices in the target environment, an observation device matching the supplementary observation requirement as the second observation device, wherein the plurality of observation devices comprise at least one of a movable observation device and an immovable observation device
S1422
Determining the supplementary observation parameter based on the position of the to-be-identified contaminant and the supplementary observation requirement

FIG. 6

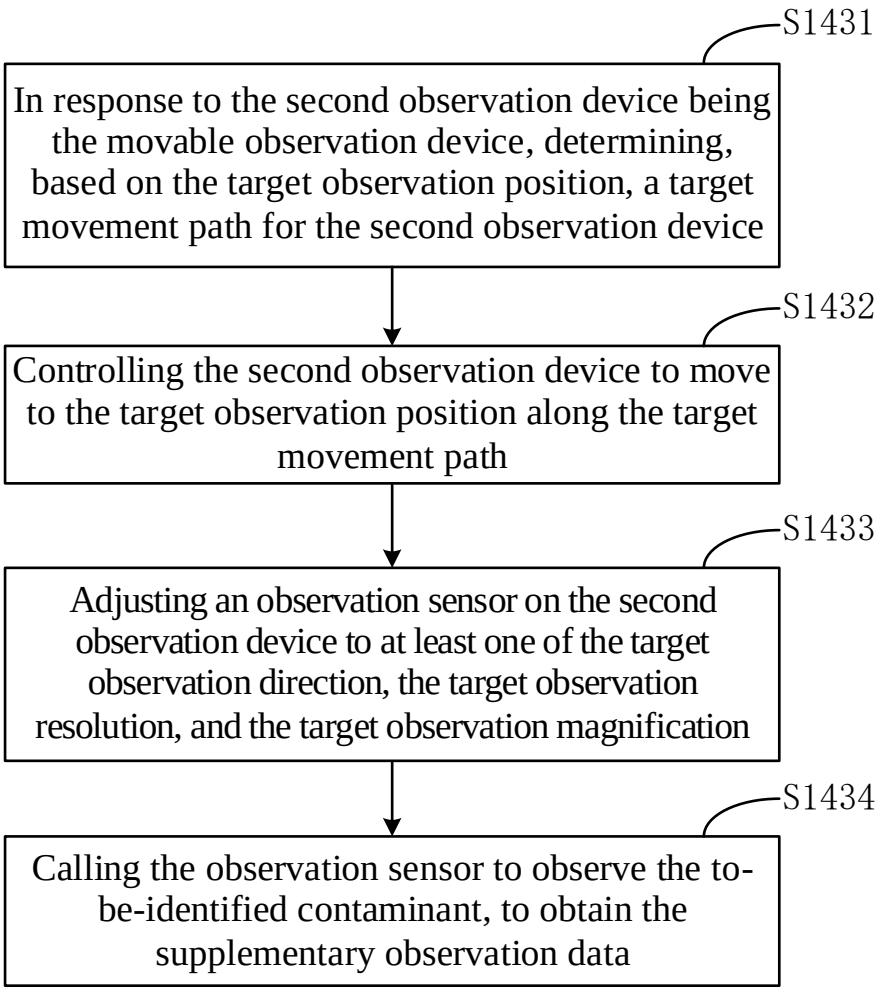

S1431
In response to the second observation device being the movable observation device, determining, based on the target observation position, a target movement path for the second observation device
S1432
Controlling the second observation device to move to the target observation position along the target movement path
S1433
Adjusting an observation sensor on the second observation device to at least one of the target observation direction, the target observation resolution, and the target observation magnification
S1434
Calling the observation sensor to observe the to-be-identified contaminant, to obtain the supplementary observation data

FIG. 7

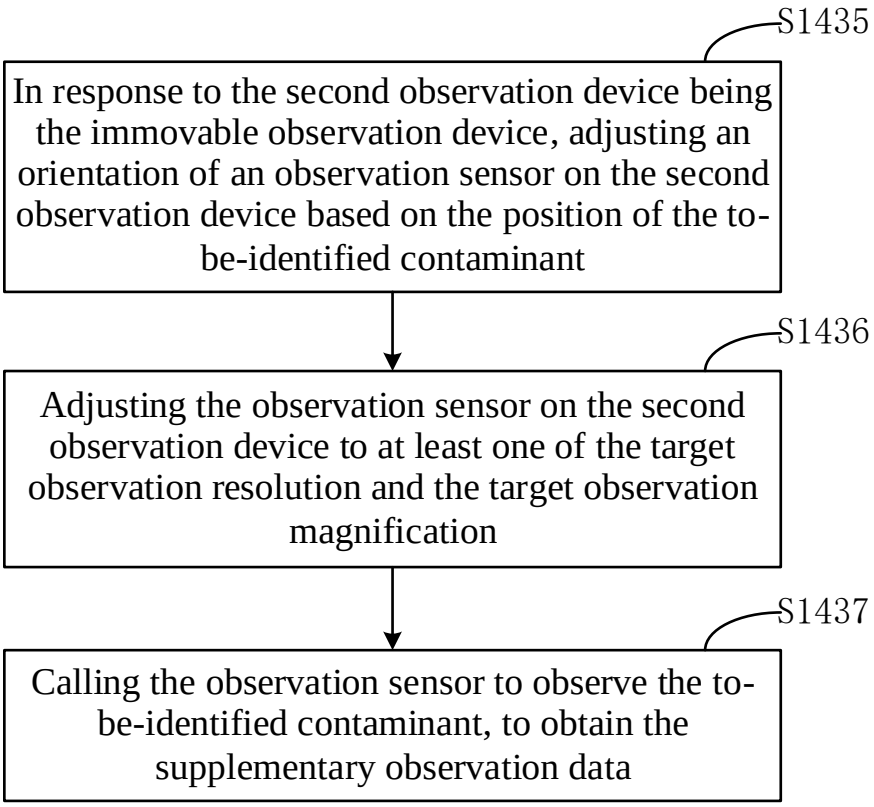

S1435
In response to the second observation device being the immovable observation device, adjusting an orientation of an observation sensor on the second observation device based on the position of the to-be-identified contaminant
S1436
Adjusting the observation sensor on the second observation device to at least one of the target observation resolution and the target observation magnification
S1437
Calling the observation sensor to observe the to-be-identified contaminant, to obtain the supplementary observation data

FIG. 8

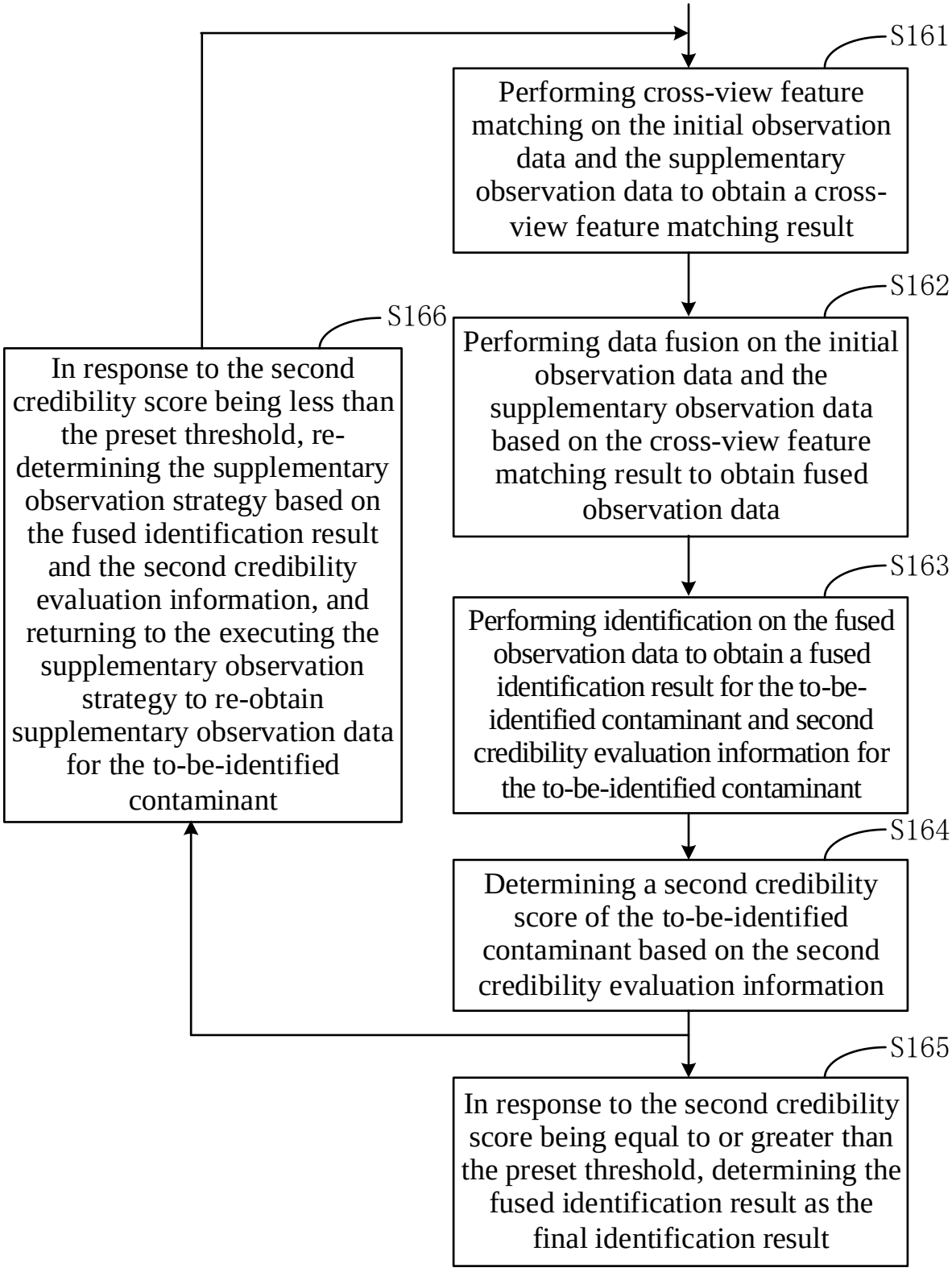

S161
Performing cross-view feature matching on the initial observation data and the supplementary observation data to obtain a cross-view feature matching result
S162
Performing data fusion on the initial observation data and the supplementary observation data based on the cross-view feature matching result to obtain fused observation data
S163
Performing identification on the fused observation data to obtain a fused identification result for the to-be-identified contaminant and second credibility evaluation information for the to-be-identified contaminant
S164
Determining a second credibility score of the to-be-identified contaminant based on the second credibility evaluation information
S165
In response to the second credibility score being equal to or greater than the preset threshold, determining the fused identification result as the final identification result
S166
In response to the second credibility score being less than the preset threshold, re-determining the supplementary observation strategy based on the fused identification result and the second credibility evaluation information, and returning to the executing the supplementary observation strategy to re-obtain supplementary observation data for the to-be-identified contaminant

FIG. 9

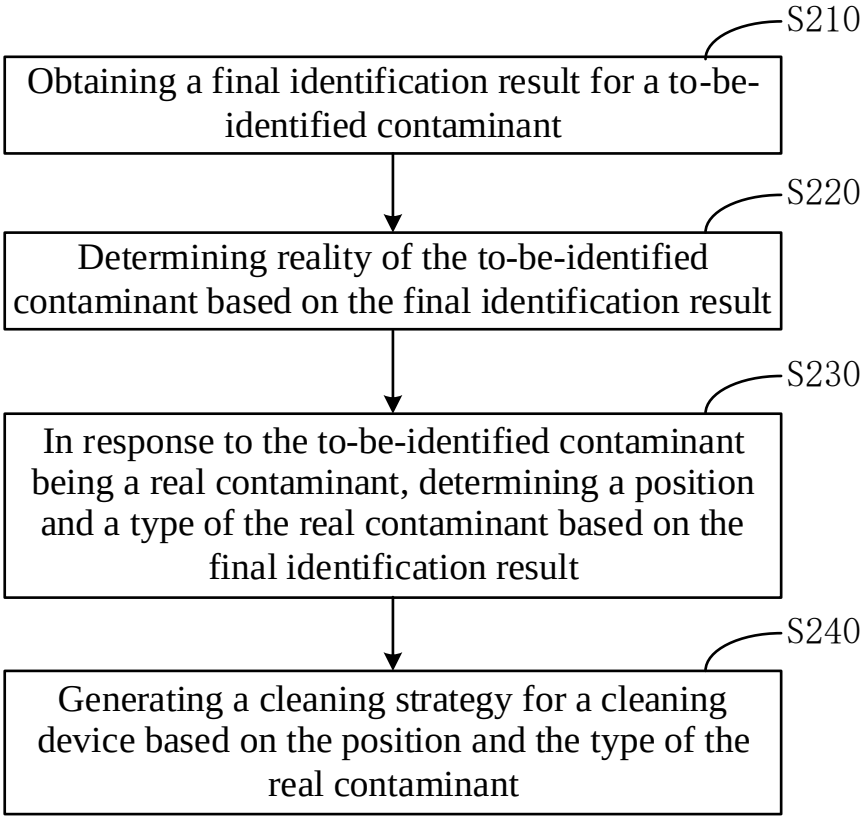

S210
Obtaining a final identification result for a to-be-identified contaminant
S220
Determining reality of the to-be-identified contaminant based on the final identification result
S230
In response to the to-be-identified contaminant being a real contaminant, determining a position and a type of the real contaminant based on the final identification result
S240
Generating a cleaning strategy for a cleaning device based on the position and the type of the real contaminant

FIG. 10

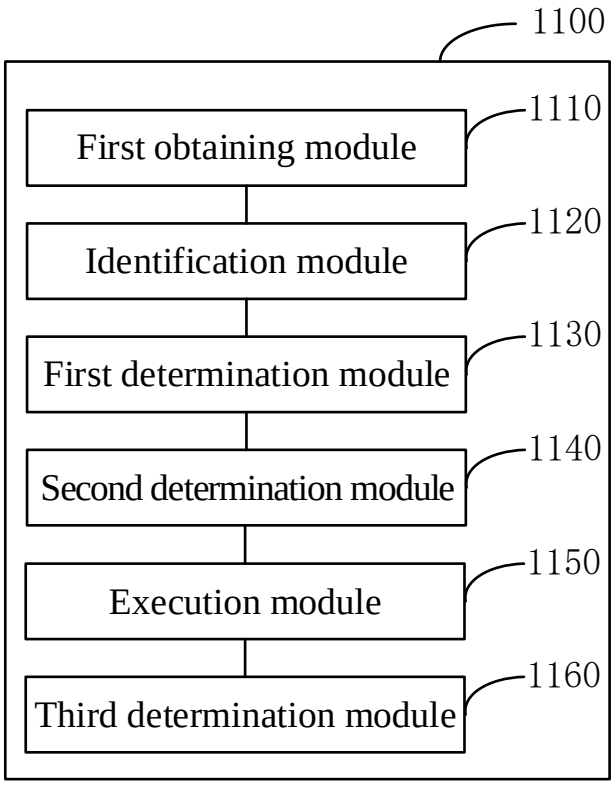

1100
1110
First obtaining module
1120
Identification module
1130
First determination module
1140
Second determination module
1150
Execution module
1160
Third determination module

FIG. 11

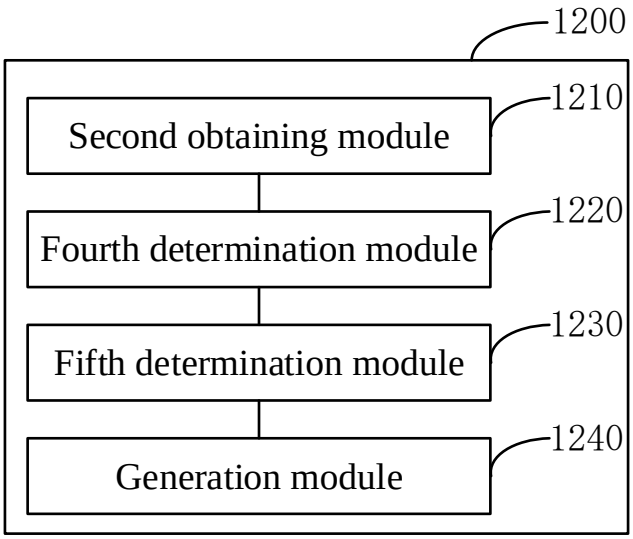

1200
Second obtaining module
1210
Fourth determination module
1220
Fifth determination module
1230
Generation module
1240

FIG. 12

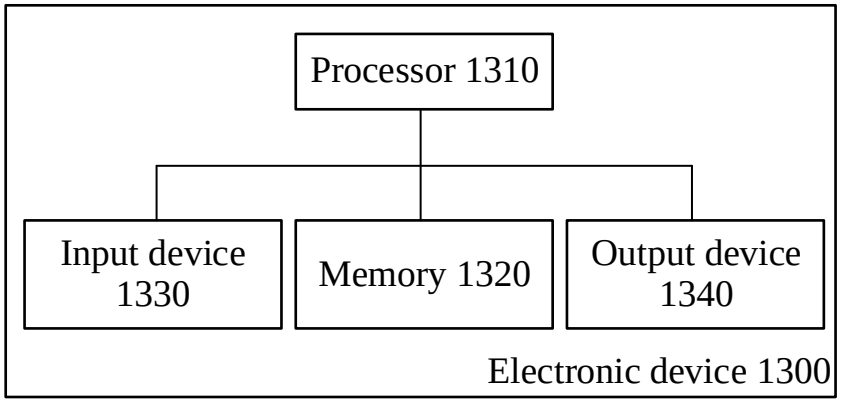

Processor 1310
Input device 1330
Memory 1320
Output device 1340
Electronic device 1300

FIG. 13