

After the accumulated liquid has been discharged from the reservoir 104 into the sample bottles at filling station X, and valves A and B have been closed, a counter, indicated at 162, which is responsive to the closing of valve A, actuates an indexing mechanism 164, which in turn actuates the motor 118 and worm gear 120 to rotate the carousel a predetermined amount so as to move the filled bottles from the filling station X and to advance the next row comprised of one large bottle 106 and three small bottles 108 into position at the filling station X. The above-described operation for filling the large bottle 106 and the small bottles 108 at fill station X is repeated until all of the 20 large bottles and 60 small bottles on the carousel are filled. At the end of this time, the counter 162 shuts off power to the indexing mechanism 164 and causes diversion of liquid filling the reservoir 104, through the overflow tube 136 and into the overflow bottle 140.

An event logger (printer) 166 records the time when sampling begins and when the carousel indexes to a new position.

It will be understood that, if desired, the automated sampler can be used for filling only the large sample bottles 106 and omitting the small sample bottles 108. Under the circumstances, components for filling the small bottles, including valve B and its associated timer 154, the auxiliary discharge line 146, air cylinder 148, and the hypodermic needle devices 150 can be omitted.

Further, if desired, the above-described mechanism for actuating the automated sampler, including the small fog detector 155, and its associated resistance grid 156 and relay 158 can be omitted, and the power source at 160 can be turned on manually or by any other means at any desired time.

In addition, the automated sampler 100 can be employed separately, that is, without combining it with the cloud water collector 20, e.g., for collecting rain water. In the latter case, viewing FIG. 15, a rain water collecting funnel 168 can be connected to the tube 76 for discharge of a sample of rain water into the liquid reservoir 104. The automated sampler then functions in the manner described above for collecting multiple samples of the rain water so collected. When not in use for collecting rain water, a cover indicated by dotted lines 170 can be placed over the funnel.

From the foregoing, it is seen that the invention provides an improved device for collecting cloud water or fog water for chemical analysis which operates efficiently and rapidly to collect substantial amounts of liquid water for chemical analysis, and which is reliable, simple to construct and inexpensive. In addition, the cloud water collector can be automated by use in combination with an automated sampler device to collect multiple samples of fog water in the field, with a minimum of attention and labor expense. Further, the automation device can be employed separately for collecting rain water.

Since various additional changes and modifications of the invention will occur to and can be made readily by those skilled in the art without departing from the invention concept, the invention is not to be taken as limited except by the scope of the appended claims.

What is claimed is:

1. A rainwater collector for automating the collection of successive rainwater samples which comprises rainwater collecting means, a reservoir in fluid communication with said rainwater collecting means,

a carousel, means supporting said carousel for limited rotation, a rack on said carousel adapted to support a plurality of first sample bottles in a circle adjacent the outer periphery of said carousel and a plurality of second smaller sample bottles in concentric circles adjacent said circle of first containers, a fill station on said carousel wherein one of said first bottles and a plurality of said second bottles in said concentric circles are in a row, a discharge line from said reservoir, a first valve in said discharge line adapted to discharge liquid from said reservoir into one of said first bottles at said fill station, a second valve in said discharge line adapted to discharge liquid from said reservoir into the second bottles in said row at said fill station, a liquid level sensor to monitor collection of a predetermined volume of rainwater in said reservoir, means associated with said liquid level sensor to actuate said first valve means when said predetermined volume of rainwater has been collected in said reservoir to open and fill a first bottle at said fill station, timer means for actuating said second valve when said first valve has been actuated, to open and fill the second bottles in said row at said fill station, said timer means closing said second valve after a pre-set time interval, and said means for actuating said first valve closing same after a longer pre-set time interval, driving means to actuate the carousel to index a successive row of a first bottle and a plurality of second bottles at said fill station, means for sensing the closing of said first valve to actuate said driving means to index a successive row of bottles at said fill station, said last-mentioned means including a counter for deactivating said driving and indexing means when all of the bottles on said carousel have been filled at said fill station, an overflow tubing connected to the discharge line from said reservoir, and an overflow bottle connected to said overflow tube, for receiving liquid from said reservoir after deactivation of said driving and indexing means by said counter.

2. The rainwater collector of claim 1, and also including timer means for timing the flow of rainwater into said reservoir over a preselected time interval to actuate said first valve after said pre-set time interval, to discharge rainwater from said reservoir into said first bottle at said fill station, said liquid level sensor or said last-mentioned timer means actuating said first valve to discharge the rainwater from said reservoir after said predetermined volume is achieved or said preselected time interval has elapsed, whichever occurs first.

3. The rainwater collector of claim 1, said second smaller bottles having a septum cover thereon, and means for piercing said septum bottles at the fill station for introduction of sample liquid to said bottles when said second valve has been opened.

4. A rainwater collector for automating the collection of successive rainwater samples which comprises rainwater collecting means, a reservoir in fluid communication with said rainwater collecting means,