United States Patent

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[54] **CYCLE VACUUM SAMPLER DEVICE**
2 Claims, 1 Drawing Fig.

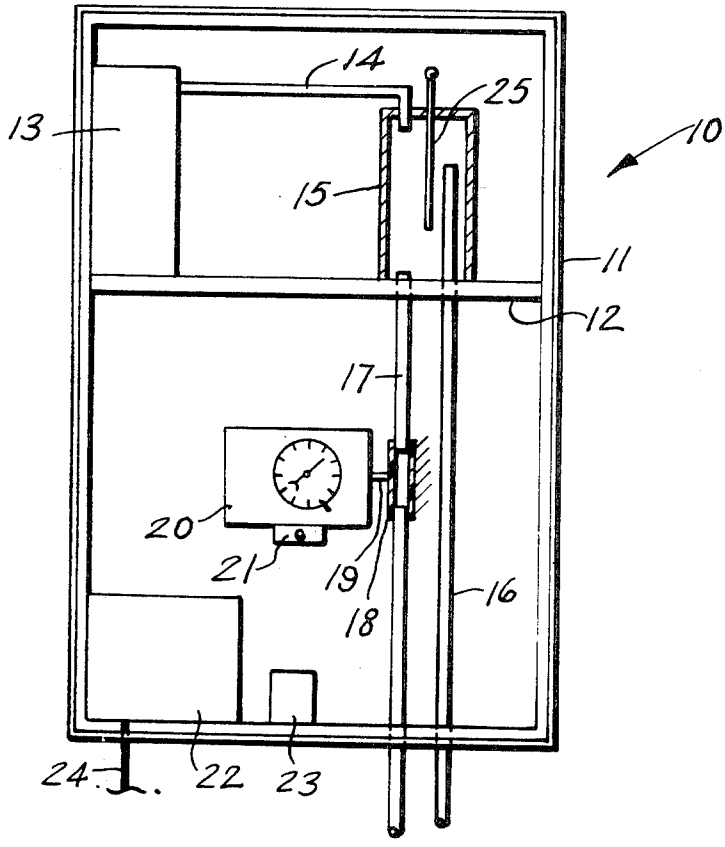
[52] **U.S. Cl.** ..... **73/421 R**
[51] **Int. Cl.** **G01n 1/14**
[50] **Field of Search** ..... 73/421, 421.5, 425.2, 425.4, 425.6, 421 B

[56] **References Cited**
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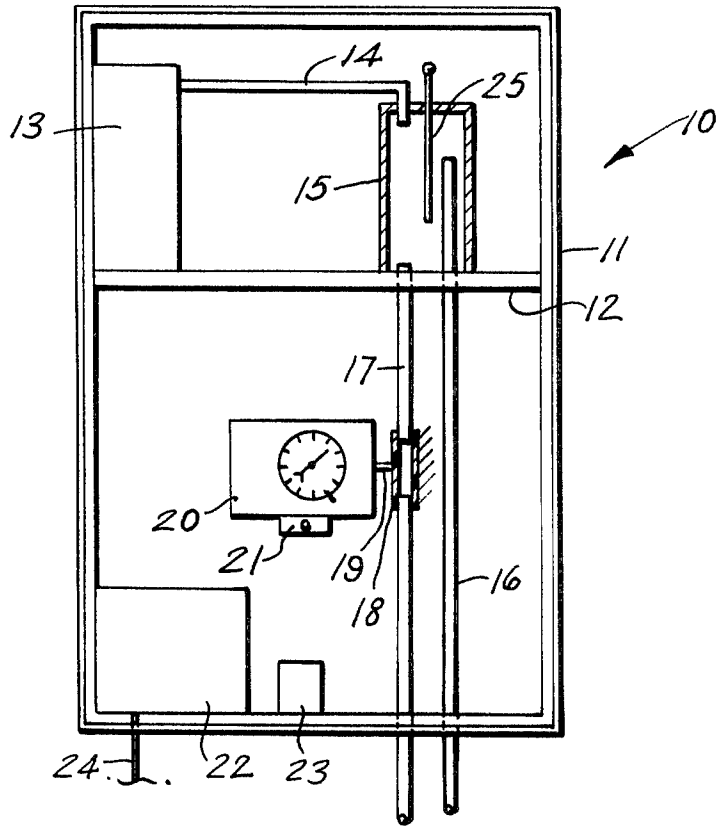
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ABSTRACT: An apparatus for automatically collecting a sample of water which is to be analyzed, the device including a vacuum pump, a collecting container for the water, and a mechanism that includes a relay operated valve, the relay being activated through a timer device so that a small quantity of water is collected approximately every 20 minutes so that after a 24 hour period a complete water sample for analysis has been obtained showing characteristics of the water at intermittent times throughout the day.



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3,589,197



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CYCLE VACUUM SAMPLER DEVICE

This invention relates to instruments for collecting water for analyzation thereof.

It is therefore the main purpose of this invention to provide a water sample collecting device for use particularly in a waste water treatment plant.

Another object of this invention is to provide a device of the type described, which will pick up a small quantity of water approximately every 20 minutes within a 24 hour period in order that a gallon of mixed samples may be collected for testing.

Another object of this invention is to provide a water sample collecting device which will operate on a self-contained battery when used for streams and the like.

A further object of this invention is to provide a water sample collecting device which will have a minimum amount of parts and will be easy to clean and will allow the tubes to drain after use.

Other objects of the present invention are to provide a cycle vacuum sampler device which is simple in design, inexpensive to manufacture, rugged in construction, easy to use and efficient in operation.

These and other objects will become readily evident upon a study of the following specification and the accompanying drawing wherein:

The drawing is the sole view of the present invention.

According to this invention, a water sample collecting device **10** is shown to include a rectangular housing **11** in which is secured fixedly a shelf **12**, upon which is secured a vacuum pump **13** having a line **14**. The vacuum line **14** extends into the upper portion of a water sample container.

Extending through and into container **15** is a tube **16** which is for the purpose of picking up the water that is to be sampled. A tube **17** also extends through shelf **12** and into container **15** and is coupled to a flexible plastic tube **18** which serves as valve means for tube **17** when rod **19** of timer **20** depresses plastic tube **18**.

An off switch **21** is provided so that device **10** may be shut off, and a battery **22** rests within housing **11** and allows complete mobility of device **10**.

A relay **23** is also carried within housing **11** for a purpose which hereinafter will be described. A power line **24** is also included in device **10** in order that it may operate off an external power source.

Device **10** is connected to an external power or is switched

to battery plate. Switch **21** is turned on and the timer **20** activated whereupon timer **20** will by means of rod **19**, press against the plastic tube **18** thus closing it. When switch **21** is closed vacuum pump **13** is also activated and will pump air from container **15** and tube **17** being closed by means of the plastic tube **18** will cause water to travel upward through tube **16** into sample container. When the water level reaches the electrode **25** within container **15**, which is adjustable, the current then flows through a relay which is in the vacuum sample container thus turning off vacuum pump **13**, as timer **20** progresses through its time cycle.

When timer **20** reaches a predetermined point, the power is turned off and plastic tube **18** retains its normal open position thus letting container **15** drain.

What I now claim is:

1. An automatic water sample collecting device comprising in combination, a portable housing, a self-contained battery supply carried within said housing for the remote operation thereof, a vacuum pump carried within said housing providing a vacuum means for creating a differential in pressure in order to cause water to be drawn into a water tank carried within said housing, said water tank providing means for water to be held, a timer carried within said housing, a flexible tube in conjunction with a rod extending from said timer comprising a valve, and a relay also carried within said housing providing for the automatic shutoff of said device, switch means carried by said device providing for the operation of said vacuum pump, said vacuum pump having line means connected to said water tank, said vacuum pump serving to create said differential in pressure in order that water may enter said flexible tube which extends to said water tank, said timer having a preset cycle causing said rod extending from said timer to depress said flexible plastic tube forming said valve means within a second tube extending into said water tank, said second tube forming a drain means when said valve is opened after each cycle of operation and water entering said water tank reaching a predetermined level governed by the adjustment of an electrode within said water tank, said electrode causing said relay to close, thus shutting off vacuum operation of said vacuum pump automatically.

2. The combination according to claim **1**, wherein said timer of said device when reaching its predetermined cycle end also switches off said power supply simultaneously when said plastic tube forming valve means is open in order to allow said container to drain.