

nizer motor is turned off by the effect of the cam 173f in reopening the switch 187, and the discharge solenoid valve is again energized as the cam 173c closes the switch 184 for a second time. During the time that this valve is open, the cleansing wash water is drawn through the centrifugal pump 148 and expelled through the drain.

The continued rotation of the cams 173 causes the cam 173d to close the switch 186 a second time and open the wash solenoid valve 123 to allow a new quantity of rinsing water to wash down the bowl and enter the chamber 128. The cam 173f closes the switch 187 during the time and energizes the homogenizer motor 144 to stir up the wash water. The sampler motor cam 173b then closes the switch 174 for a brief interval pulsing the sampler motor 88 into operation. The sampler motor runs for a complete cycle of sampling of one vacutainer. This provides the first wash of the inside of the sampling needle 47 as shown in FIG. 6. The wash water in this case goes into an extra vacutainer inserted into the members 54 and 55 solely for the purpose of receiving the water that washes the needle.

At the same time that the switch 174 is closed, the cam 173g opens the switch 180 and holds it open until the end of the operating sequence. This prevents current pulses from flowing through the switch 179 to the stepping coil 171a and causing the arms 171c and 171d to step forward until a new sequence has started.

At the end of the cycle of operation of the sampler motor 88 when the first washing of the needle takes place, as has just been described, the opening of the switch 178 stops the motor 88. By that time the timer motor 172 will have driven the cams 173 past the point at which the cam 173b can close the switch 174. Continued rotation of the motor 172 causes the cam 173c to close the switch 184 again to open the discharge valve 147 and allow water in the chamber 128 to flow out the drain 149. The discharge valve 147 closes again when the cam 173c rotates farther and allows the switch 184 to open.

A second needle-washing cycle is then carried out in a manner similar to the first such cycle. That is, continued rotation of the cams 173 by the timer motor 172 causes the cam 173d to close the switch 186 and energize the wash solenoid valve 123. This permits a new quantity of water to flow into the chamber 128. The cam 173f then closes the switch 187 to start the homogenizer motor 144 again. The cam 173b then closes the switch 174 briefly again to supply another pulse to operate the sampler motor 88 for another cycle. The water for the second cleansing of the needle will go into still another vacutainer placed in a recess in the holders 54 and 55 for that purpose.

At the completion of rotation of the sampler motor 88 following the second needle washing cycle, the cam 173c again closes the switch 184 to open the discharge valve 147 and allow the remaining water to flow out the drain 149. The final event of a complete testing sequence occurs when the cam 173a closes the switch 183 and thereby completes the circuits through the unlatching coils 167b and 168b to release both of the latched relays 167 and 168 to turn off the entire circuit.

A typical time for homogenizing a fecal sample, transferring the homogenate to five vacutainers, and completing the automatic cleansing of the apparatus is approximately three or four minutes. During the entire procedure, the sample will be isolated from the hospital

personnel, from the time of sample collection through the final steps of analysis.

The apparatus as embodied in either FIG. 1 or FIGS. 5 and 6 can be operated as a portable toilet with suitable connections to vents, drains, water lines, and power lines, or it can be placed in a fixed location, in which case the connections can be of a more permanent nature.

While the open-topped chamber 128 in the embodiment in FIGS. 5 and 6 does not provide quite as rigid control of the volume as the container 17 with its lid 22 in FIG. 1, the difference in accuracy of measurement of the total homogenization volume is not significant. The results are still well within the range of accuracy necessary to constitute quantitative analysis of the sample. The most significant difference in this regard between the embodiment in FIG. 1 and that in FIGS. 5 and 6 is that the piston 61 can be used only in the embodiment in which the container is sealed liquid-tight by the lid 22. Use of the piston allows more accurate control of the quantity of homogenate allowed to enter the vacutainers.

Under certain circumstances it may be required to control the speed of the homogenizer motor 34 in FIG. 1 or the homogenizer motor 144 in FIGS. 5 and 6. This can be done by means of a standard silicon-controlled rectifier circuit arranged to cause the motor speed control circuit to vary, for example, from a high initial homogenization speed to a lower stirring speed to keep the mixture stirred up during the sampling process.

While this invention has been described in terms of specific apparatus, it will be understood that modification may be made therein and that the true scope of the invention is determined by the following claims.

What is claimed is:

- Apparatus for receiving and processing noxious material, the apparatus comprising:
 - a container comprising an upper opening through which a quantity of the noxious material passes into the container;
 - means to mix the material in the container with a controlled quantity of liquid to form a relatively homogeneous mixture of the liquid and particles of the material;
 - an enlarged section extending upwardly from the container and joined liquid-tight to the container around the upper opening;
 - means to limit aerosols within the container from rising out of the apparatus, the aerosol limiting means including a manifold supported on the enlarged section and an exhaust fan connected to the manifold to draw the aerosols out of the apparatus by way of the manifold;
 - a sample receiver comprising a self-resealing resilient water-tight closure member; and
 - means attached liquid-tight to the container to inject a quantity of the mixture into the sample receiver through the self-sealing closure member.
- Apparatus for receiving and processing noxious material, the apparatus comprising:
 - a container to receive a quantity of material to be mixed and comminuted in the container with a controlled quantity of homogenizing liquid;
 - homogenizing means within the container to comminute and agitate vigorously the material and the homogenizing liquid to form a homogeneous mixture of the liquid and particles of the material;