United States Patent [19]

Zauft

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[54] **TEST TUBE FOR BODY LIQUIDS**

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[52] **U.S. Cl.** ..... **23/292**, 23/253 R, 23/259

[51] **Int. Cl.** **G01n 1/10**

[58] **Field of Search** 23/292, 253, 259; 235/151.12, 151.13

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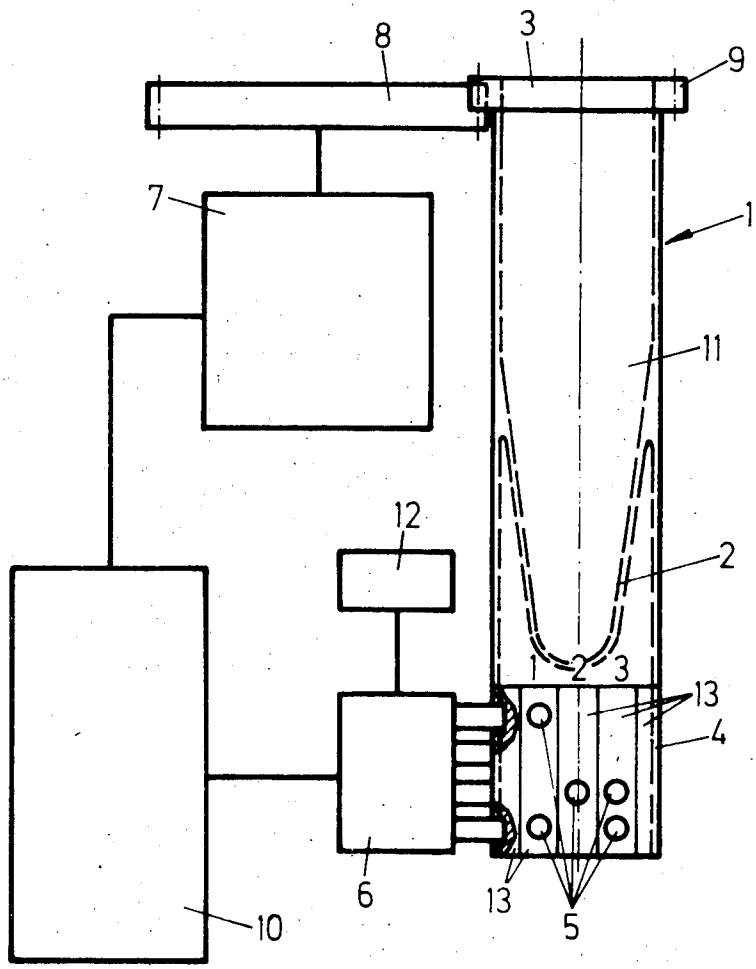
[57] **ABSTRACT**

A little test tube is used to receive body liquids in an automated analyzer. The tube has a portion receiving the liquid, a supporting portion and a further portion carrying coded data for identification of the liquid being tested. The invention is particularly characterized in that the shell of the tube extends axially beyond the part receiving the liquid for receiving stamped coded data.

5 Claims, 3 Drawing Figures



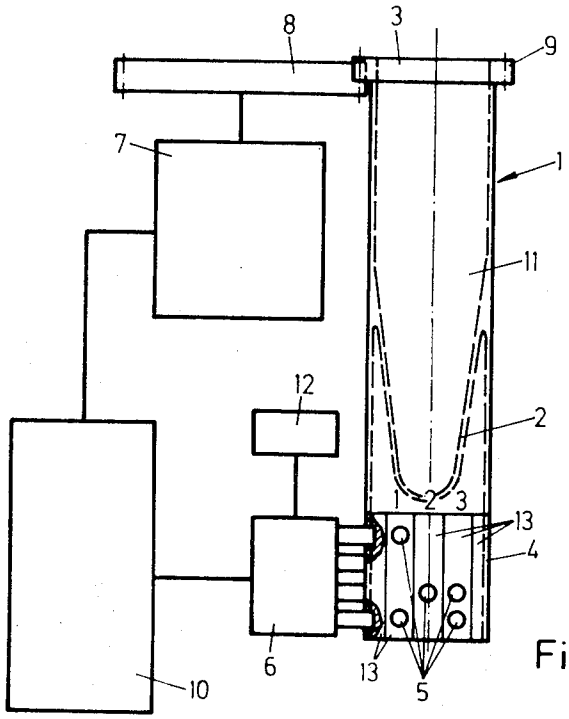


Fig.1

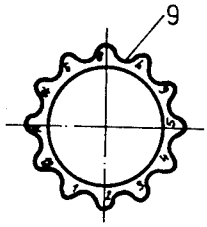


Fig.2

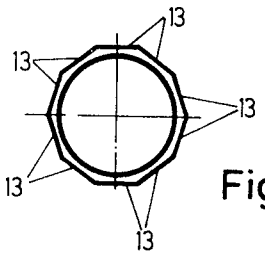


Fig.3

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TEST TUBE FOR BODY LIQUIDS

This invention relates to a test tube for body liquids and refers more particularly to a small test tube receiving body liquids for use in an automated analyzer and having a part receiving the liquid, a supporting part and a further part for providing coded data for the identification of the liquid being tested.

Automated analyzers are now used to an increasing extent for the purpose of raising laboratorium capacity and at the same time rationalizing the operation of the laboratory. These automatic analyzers are operated by an electronic computer according to a predetermined program. In order to surely avoid errors in coordinating the test and the patient despite a large number of taken tests it is particularly important to provide identification data which cannot be lost upon the test tubes.

It is known in the art to provide each tube with its own label. This requires additional manual operation by the laboratory workers and furthermore, has the drawback that the label can be easily lost, for example, during the centrifuging of the tests. To avoid this drawback a test tube has already been provided wherein a part of the upper edge of the tube is shaped as a fan extending above the edge and at right angles to the central axis of the tube to be inscribed with coded information. To provide rational operation this tube is made of one piece with the fan from a sprayed plastic part. However, when this tube was used the outwardly extending outstanding fan was found to be unsatisfactory. Furthermore it is not easy to always bring the fan into the correct position for obtaining the information.

An object of the present invention is to eliminate the drawbacks of prior art devices.

Another object is the provision of a compact small tube for receiving a liquid being tested and the data belonging to the test, wherein simple means make possible a precise coordination of the data with a reading device.

Other objects of the present invention will become apparent in the course of the following specification.

In the accomplishment of the objective of the present invention it was found desirable to extend the shell of the tube axially beyond the part receiving the liquid for receiving coded data which can be stamped thereon.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawing showing by way of example only, a preferred embodiment of the inventive idea.

In the drawing:

FIG. 1 is a side view partly in section of a test tube of the present invention connected with corresponding parts of an automated analyzer.

FIG. 2 is a top view of the test tube shown in FIG. 1.

FIG. 3 is a bottom view of the test tube.

FIG. 1 shows a small test tube 1 used for transmitting body liquids in an automated analyzer and consisting of three parts, namely a part 11 receiving the liquid and having a funnel-like converging portion at its lower end, a bead 3 at the upper edge of the tube serving as a holding member for hanging the tube on a transporting mechanism, as well as an information providing portion 4 constituting an extension of the shell of the tube 1 in the axial direction beyond the part 11 of the tube which receives the liquid. The part 4 is used for receiving coded data which can be read by a machine

and which consists in the illustrated example of pressed groups of holes 5.

To indicate the cooperation of a test tube of the present invention with a reading stage of an automated analyzer, one of such reading stages is illustrated diagrammatically in FIG. 1. It includes a key reading device 6 and a step motor 7 used to turn stepwise a gear wheel 8 meshing with a toothed rim 9 provided upon the outer side of the bead 3, so that the tube is rotated axially. The motor 7 is actuated by a steering device 10. The reading device 6 transmits an impulse to the steering device 10 after it has completed the reading of the combination of holes directed toward it. Thereupon, the steering device 10 causes the motor 7 to provide the turning of the tube to the extent required by the reading of the following hole combination. This procedure is repeated until all the coded data distributed over the peripher of the tube portion 4 have been read. The evaluation of the read data is carried out in the known manner by an electronic data treating device 12.

As indicated in FIG. 1 the surface of the tube 1 located directly above the part 4 used for receiving the data can be provided with clear textual information associated with the data.

The top view of the tube 1 shown in FIG. 2 indicates that the clear text information corresponding to the code can be also provided upon the upper surface of the bead 3. Such an association with the corresponding groups of openings will be particularly clear for supervision when the number of teeth of the toothed rim 9 is equal to the number of groups of openings.

FIG. 3 shows in combination with FIG. 1 that the outer surface of the part 4 used for receiving the data has an angular cross-section (for example ten-angular), so that there is a number of flat surfaces 13 (for example ten) for impressing groups of openings 5.

I claim:

1. A test tube for body liquids for use with an automated analyzer, said tube having an inner partition dividing it into first and second chambers, the first chamber being adapted to receive the body liquid, the second chamber having coded data impressed upon its wall around the longitudinal axis of the tube, an automatic reading device for reading said coded data to identify the body liquid, a tube support comprising a bead carried upon the upper end of the first chamber, and means engaging said bead for rotating the tube about its longitudinal axis to read the coded data.

2. A test tube in accordance with claim 1, wherein the outer surface of the first chamber located directly above the second chamber is provided with clear text inscriptions corresponding to the coded data.

3. A test tube in accordance with claim 2, wherein the upper surface of said bead is provided with said clear text inscriptions corresponding to the coded data.

4. A test tube in accordance with claim 1, wherein said wall of said second chamber has an angular cross-section providing a plurality of flat outer surfaces for the impression of groups of holes constituting said coded data.

5. A test tube in accordance with claim 1, wherein said bead consists of a toothed rim located upon its outer surface.

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