

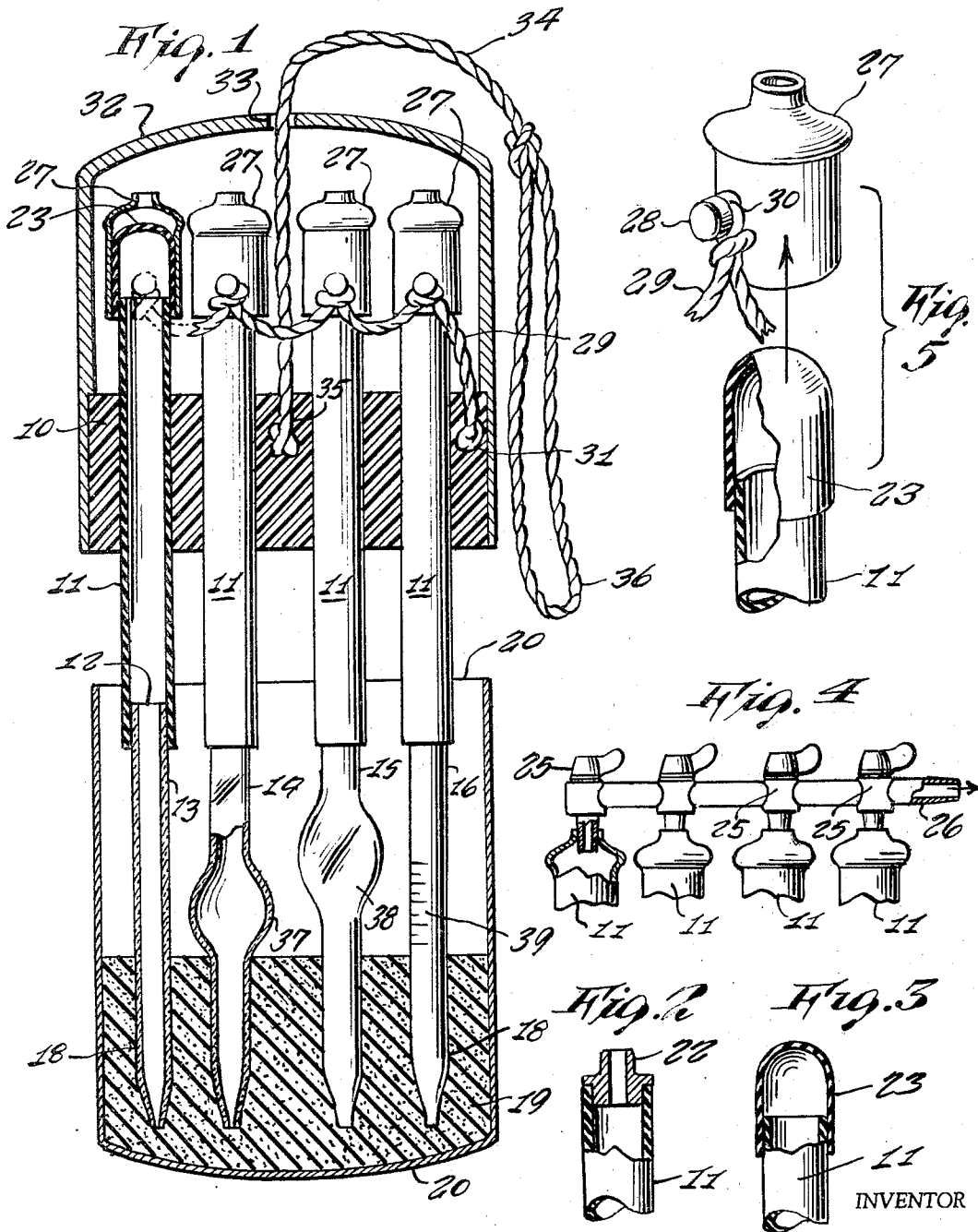
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PLURALITY OF ASPIRATORS

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7 Claims

ABSTRACT OF THE DISCLOSURE

An assembly of a plurality of pipettes for collecting samples of liquids. Each pipette is separately secured to one end of an individual flexible tube. The other end of the flexible tube is provided with means for producing and maintaining suction for filling the pipette to the desired level and retaining the liquid therein. The flexible tubes are secured in a suitable holder.

Specification

The present invention relates to an assembly of a plurality of pipettes for collecting samples of liquids. Each pipette is individually held in one end of a flexible tube. All of the pipettes are thus freely movable, each at one end of its individual flexible tube. The other end of each flexible tube is provided with suction producing means for aspirating liquid into its associated pipette. Intermediate its ends, each flexible tube is secured to suitable mounting means.

The suction producing means may be a compressible bulb. When a bulb is used, it is desirably provided with a removable protective cover to prevent accidental discharge of the liquid from its associated pipette. Alternatively, a common suction line with individual valves may be utilized, or a mouthpiece may be provided for producing the suction orally as in the case of a conventional unmounted pipette.

A removable cover is provided which encloses the upper end portions of all of the flexible tubes together with the bulbs or other suction producing means associated with the upper ends of the tubes.

A removable enclosure for the lower ends of the pipettes is likewise provided.

The invention is described in greater detail in the following specification with reference to the accompanying drawing forming a part thereof.

In the drawing:

FIGURE 1 is a front elevational view of an embodiment of the invention, the view being partially broken away and shown in section to illustrate details of construction.

FIGURE 2 is a fragmentary front elevational view of the upper end portion of a single flexible tube equipped with a mouthpiece for the oral production of suction.

FIGURE 3 is a fragmentary front elevational view of the upper end portion of a single flexible tube equipped with a compressible bulb for the production of suction.

FIGURE 4 is a fragmentary front elevational view of the upper end portions of a plurality of flexible tubes all connected to a common suction line and each provided with an individual control valve for separately controlling the suction in each flexible tube.

FIGURE 5 is an exploded perspective view showing a compressible suction bulb and a removable protective cover therefor.

In FIG. 1, 10 designates the tube-holding means of plastic or other suitable material located a short distance below the upper end portions of the flexible tubes 11; 12 designates the top-ends of a plurality of pipettes 13, 14, 15 and 16.

18 designates the bottom ends of the plurality of pip-

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ettes. 13 is one type of pipette. The pipettes 13-16 are made of glass. However, other types of transparent material can be used.

The bottom ends 18 of the different-purpose pipettes are embedded in tubes of semihard plastic (not shown) inserted into a sponge rubber base 19 enclosed by a semihard or hard plastic outer cover 20. As shown in FIG. 2, the top ends of the tubes 11 can have mouth pieces 22 permanently placed in them, or may have a plurality of rubber suction bulbs 23 (FIG. 3) attached to the individual tubes 11. As shown in FIG. 4, the tubes 11 may be connected by a conventional series of valves 25, arranged in tandem horizontally to a suction line 26.

As shown in FIGS. 1 and 5, a removable protective cover 27 is provided for each of the suction bulbs 23. Each cover 27 is provided with an integrally formed stud 28. A retaining cord 29 is knotted as indicated at 30 to interconnect all of the studs 28. One end of the cord 29 is imbedded in the plastic tube holder 10, being knotted as indicated at 31 to effect a permanent connection. This arrangement permits the covers 27 to be removed individually or simultaneously, remaining at all times secured to the tube holder 10 by the cord 29.

The tube holding member 10 is provided with a removable cover 32. The cover 32 has an aperture 33 formed in its top through which a carrying cord 34 passes freely. One end of the cord 34 is imbedded in the tube holder 10 at 35 and the other end has a loop 36 formed therein for convenience in securely holding the cord 33.

Referring to the pipettes, pipette 13 is straight. Pipette 14 is enlarged at 37 to provide an increased volumetric capacity. Pipette 15 is similarly enlarged at 38. Pipette 16 is provided with a graduated scale 39.

In operation, the cover 32 is removed and the individual covers 27 are removed, as desired, to expose the bulbs 23. In some instances, it will be desirable to collect several specimens of the same sample to be subsequently individually subject to different tests. Desirably, a separate sample is collected in each of the pipettes which, for purposes of simplicity, may all be identical.

Alternatively, the pipettes 13-16 may be individually filled, each with a different sample of liquid. Using the arrangement of FIG. 2, each pipette will be individually orally aspirated to collect the desired volume of the liquid. With FIG. 4, the valves are individually opened and closed, as desired, to connect the pipettes to the suction line 26.

While I have shown and described what I believe to be the best embodiments of my invention, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A device of the class described, comprising: a plurality of flexible tubes; common holding means for all of said tubes, said holding means supporting each tube separately intermediate its ends; a plurality of pipettes, each pipette having one end portion connected to one end portion of one of said tubes, the other end portion of each pipette being free; and individual suction means for each tube, said suction means being connected to the other end portion of its associated tube.

2. A device according to claim 1, wherein said suction means is a compressible bulb.

3. A device according to claim 2, further comprising a removable protective cover for each of said bulbs.

4. A device according to claim 3, further comprising elongated flexible retaining means interconnecting all of said covers, one end portion of said retaining means being secured to said holding means.

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5. A device according to claim 1, further comprising removable protective means for retaining said free end portions of said pipettes, said retaining means having a plurality of apertures formed therein each for receiving said free end portion of one of said tubes.

6. A device according to claim 1, wherein said suction means comprises a common suction line and a plurality of individually operable control valves, each of said valves being connected to said other end portion of one of said tubes, all of said valves being connected to said common suction line.

7. A device according to claim 1, wherein said suction means comprises a plurality of mouthpieces each for orally applying suction to said other end of one of said tubes.

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