United States Patent [19]

Gram

[11] **3,863,624**

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[54] **VACUUM CURETTAGE DEVICE**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** ..... **128/2 B,** 128/276, 128/304

[51] **Int. Cl.** **A61b 10/00**

[58] **Field of Search** ..... 128/2 B, 304, 276, 277, 128/299, 300; 215/6; 210/406, 240, 264, 334, 340, 341; 220/20, 4 R; 32/33; 15/347; 55/270, 350, 422, 418, 284, 286, 287

[56] **References Cited**

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[57] **ABSTRACT**

A vacuum curettage device comprising a cylindrical reservoir being fitted eccentrically at one end with a curette. The reservoir has at least two compartments which can be brought to communicate one at a time with the curette being fitted to a rotatable lid at one end of the reservoir, and each compartment has a filter partition to intercept solid particles removed by the curettage.

5 Claims, 5 Drawing Figures

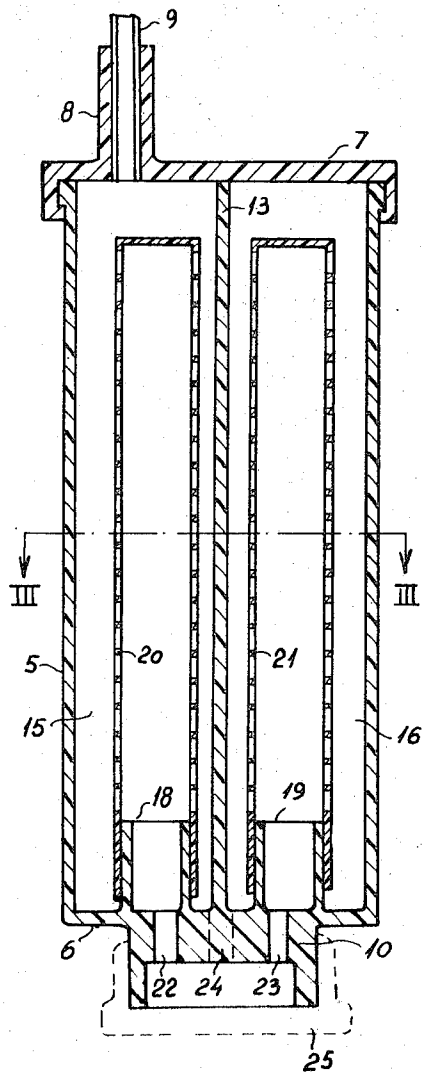


Fig. 1.

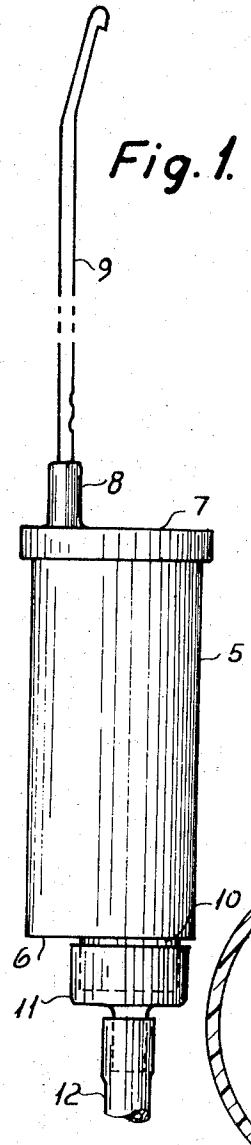
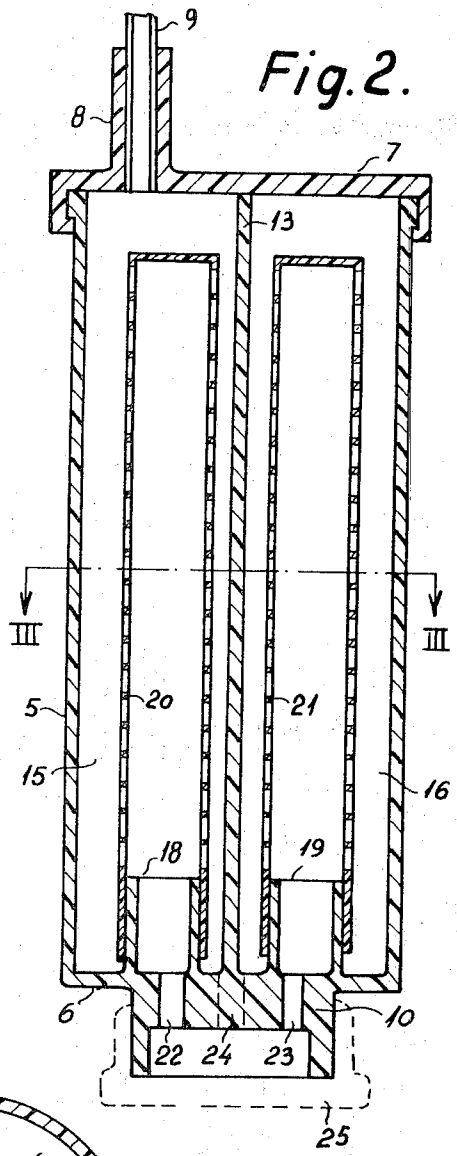


Fig. 2.



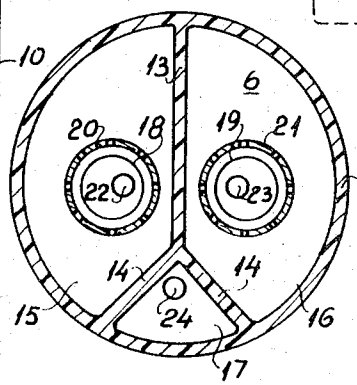


Fig. 3.

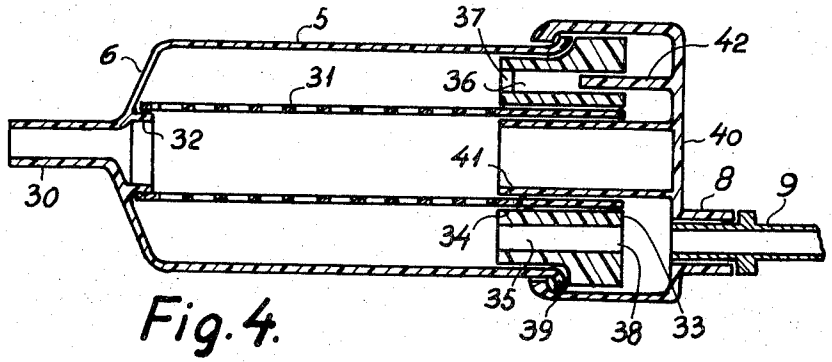


Fig. 4.

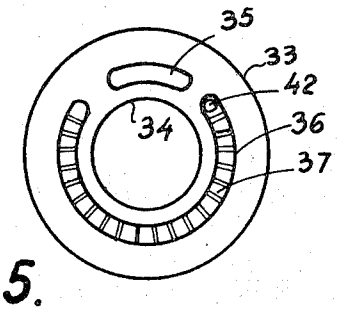


Fig. 5.

VACUUM CURETTAGE DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to a vacuum curettage device of the kind which is used for removing samples from the interior walls of body cavities, particularly the cervix and the endometrium, by means of a curette, which is inserted in the body cavity in question, the curette being eccentrically fitted into a rotatable lid at one end of an elongated reservoir. This reservoir is adapted to have a vacuum hose connected thereto and is fitted with sieve means to separate solid particles removed by the curettage from liquid and mucus. The curette itself is of the known type comprising an elongated tubular shank having a rounded, closed tip and near this a lateral opening with a sharp edge for scraping. The shank may also have a small opening adjacent the reservoir. This opening is closed with a finger to create vacuum in the shank, and by partly lifting the finger, the vacuum in the shank can be reduced or totally released, when necessary during the curettage.

A disposable vacuum curettage device of this kind is known from my U.S. Pat. No. 3,661,144. This known device is designed particularly for scraping samples from the endometrium.

However, in addition to taking samples from the endometrium, it has also been a general practice for several years to take samples from the cervix in order to disclose early stages of cancer. With the devices hitherto used for this sampling, however, collection of the removed material has proved difficult and often very incomplete. In order to carry out a mass investigation of women in the age groups, where the risk of cancer of the uterus is greatest, according to experience, there is thus a need for cheap disposable devices being easy to use and ensuring an effective collection of the material removed from the cervix and the endometrium for sucessive testing.

SUMMARY OF THE INVENTION

The main object of the invention is to provide a disposable vacuum curettage device, which is cheap in manufacture, and by means of which samples can be scraped from the cervix and from the endometrium consecutively in such a way that the samples are separately collected without risk of being infected either during the sampling or in the period until the samples can be examinated.

Accordingly, the vacuum curettage device of the invention is comprising a curette including an elongated tubular shank having an inlet opening adjacent the outer end and being connected eccentrically to a rotatable lid at one end of an elongated reservoir in the interior of which a vacuum can be created by fitting a vacuum hose to the reservoir, the reservoir having at least two compartments communicating one at the time with the curette in appropriate positions of the rotatable lid, each compartment being fitted with a filter partition to intercept solid particles removed by the curettage.

In the use of the device, after fitting the vacuum hose, the curette is inserted in the cervix and scraping movements are made, the vacuum being relieved during insertion. Due to the vacuum, removed material passes through the curette and into the compartment of the reservoir in connection with the curette at the moment.

The solid particles of the material are intercepted by the filter partition, the rest passing through and being discarded.

When curettage of the cervix has been finished, the vacuum is relieved, and the lid of the reservoir is turned to connect the curette with another compartment of the reservoir having a filter partition. The curette is then inserted in the uterus to take samples from the endometrium, vacuum being applied again. When this is finished, the vacuum is again relieved, and the curette is withdrawn. If desired, both of the sample containing compartments can then be filled up with a liquid desinfectant, e.g., formalin, curette and vacuum hose can be removed, sterile caps or plugs being fitted over or into the openings, and the reservoir can be sent away for examination of the samples.

In a preferred embodiment of the present device, the reservoir is cylindrical and divided into three compartments by means of axially extending partitions, each of the compartments having connection with a vacuum source, the three compartments being connectable one at a time with the curette by suitably turning the rotatable lid of the reservoir, and two of the compartments being fitted with a filter partition for interception of solid particles removed by the curettage. This allows for flushing the curette to rinse and disinfect it between the two samplings by connecting it with the compartment not having a filter partition and applying a vacuum to suck a liquid disinfectant through the vacuum line thus established.

The reservoir is preferably made from a suitable thermoplastic material by injection moulding, and for easy and simple moulding, the partitions dividing the reservoir are then made integral with the cylindrical outer wall and with a substantially Y-shaped cross-section.

In another embodiment of the present device, the cylindrical reservoir is closed at one end, the rotatable lid closing the other end, the vacuum hose being removably connected to an outlet at the closed end, the latter having tubular projections inside the reservoir for receiving and supporting tubular filter partitions inside two of the compartments of the reservoir. This is an inexpensive manner of making the filter partitions, which are also easily removed when the samples are to be examined.

In a further development of this embodiment of the present device, the closed end of the reservoir has an externally threaded cylindrical projection, onto which a funnel-like closure is screwed which loosely screwed on leaves open the connection between the vacuum hose and the compartments of the cylindrical reservoir, but when screwed tight disconnects such connection. This is advantageous in that the outlet to the vacuum hose can be stoppered before removing the hose, so that no risk of contamination exists here.

In another embodiment of the curettage device of the invention, one filter partition is of tubular shape coaxially mounted within the cylindrical reservoir, the latter being closed at one end except for the connection to the vacuum hose and having an insert or plug in the open end with a central bore to receive the tubular filter partition, and outside the central bore a smaller open passage to the inner of the cylindrical reservoir, and a larger passage partly surrounding the central bore and communicating with the interior of the cylindrical reservoir through a filter partition, the curette

being fitted eccentrically into the rotatable lid so as to communicate with one or the other of the passages.

BRIEF DESCRIPTION OF THE DRAWINGS In the following, the vacuum curettage device of the invention will be more fully described with reference to the accompanying drawings, in which

FIG. 1 is a side view of one embodiment of the device in substantially natural size,

FIG. 2 is a longitudinal section of the reservoir in a larger scale,

FIG. 3 is a cross-section along the line III—III in FIG. 2,

FIG. 4 is a longitudinal section of another embodiment of the reservoir, and

FIG. 5 is a cross-section of an insert in the reservoir of FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

The device shown in FIGS. 1–3 comprises a cylindrical reservoir 5 with a bottom 6 and a rotatable lid 7 with an excentrically placed connector 8 for receiving a curette 9 of known design.

At the closed end the reservoir 5 has a connector 10 which through a fitting 11 may be connected to a vacuum hose 12.

By means of partitions 13 and 14, the reservoir is divided into three compartments 15, 16, and 17, each of which can be made to communicate with the curette 9 by suitably turning the lid 7.

At the bottom of the compartments 15 and 16, the bottom 6 is fitted with internal connectors 18 and 19 on which are mounted cylindrical filter walls 20 and 21 which are closed at the end adjacent to the lid 7.

Through passages 22, 23, and 24, the connectors 18 and 19 and the compartment 17 communicate with the interior of the connector 10.

As suggested in FIG. 2, a loose cover 25 serves to close the connector 10, when the fitting 11 is removed after use of the device. Similarly, the rotatable lid 7 with the curette 9 is removed after the use, being replaced by a cover or stopper (not shown) to seal the compartments. If desired, only the curette 9 is removed and its connector 8 stoppered.

With a view to the combined use of the device, the tip of the curette 9 can be fitted with a plastic cover having an opening and a scraping edge for the sampling of the cervix, such cover to be removed before the curette is introduced into the uterus for sampling.

In the embodiment shown in FIGS. 4 and 5, the reservoir 5 of circular cylindrical shape has a closed bottom 6 with a centrally placed connector 30 for a vacuum hose (not shown). Coaxially with the cylindrical wall of the reservoir 5, a removable, tubular filter 31 is fitted within the reservoir, being held in place at the bottom 6 by the latter having an annular projection 32 around the connector 30 fitting into the tubular filter 31.

In the other end of the reservoir 5, a removable plug 33 is inserted, fitting tightly within the cylindrical wall of the reservoir, and having a central passage 34 tightly enclosing the other end of the tubular filter 31.

The plug 33 has two separate passages 35 and 36 to the interior of the reservoir 5, the passage 35 being free, whereas the passage 36 is fitted with a filter partition 37 towards the interior of reservoir 5 to form a small compartment 38 in the plug 33.

At the end where the plug 33 is inserted, the cylindrical outer wall of the reservoir 5 has an external shoulder 39 serving as a locking means for the turned-in rim of a lid 40 made from a suitably elastic plastic material to allow the rim to be pressed down over the shoulder 39. The lid 40 is thus rotatable with respect to the reservoir 5.

The lid 40 has an eccentrically placed connector 8 for a curette 9, the passage through which is in continuation of one of the passages 35 and 36, when the rotatable lid 40 is fitted to the reservoir 5 in a suitable position.

On the inner side, the lid 40 has a centrally disposed tubular projection 41, fitting closely within the tubular filter 31, and aiding in keeping this filter in its proper place.

The lid 40 may further be fitted with an interior stop pin 42 extending into the passage 36 to limit the rotation of the lid. The pin 42 is placed in a position on the lid 40 to allow the operator of the device to shift from sucking through one of the passages 35 and 36 to the other without looking at the reservoir, the lid being turned until the pin 42 reaches one end of the passage 36, the latter extending over half of a circle around the central passage 34 of the plug 33.

I claim:

1. A vacuum curettage device comprising:
- a curette including an elongated tubular shank having an inlet opening adjacent the outer end thereof;
- a rotatable lid having connected eccentrically thereto said curette;
- an elongated reservoir having at an inlet thereof said rotatable lid and in the interior of which a vacuum can be created by fitting to an outlet thereof a vacuum hose;
- said reservoir having at least two compartments, each communicating one at the time with said curette in appropriate positions of said rotatable lid; and
- each compartment being fitted with a filter partition separating said inlet from said outlet to intercept solid particles removed by the curettage.

2. The vacuum curettage device of claim 1, wherein said reservoir is cylindrical and divided into three compartments by means of axially extending partitions, each of said compartments having connection with a vacuum source, said three compartments being connectable one at a time with said curette by suitably turning said rotatable lid of said reservoir, and two of said compartments being fitted with a filter partition for interception of solid particles removed by the curettage.

3. The vacuum curettage device of claim 2, wherein said axially extending partitions of said cylindrical reservoir in cross-section substantially form a Y and are integral with the cylindrical wall of said reservoir.

4. The vacuum curettage device of claim 1, wherein said filter partitions are tubular, said reservoir is closed at one end thereof, said rotatable lid closing the other end thereof, the vacuum hose being removably connected to an outlet at said closed end, said closed end having tubular projections extending into said reservoir for receiving and supporting said tubular filter partitions inside two of said compartments of said reservoir.

5. The vacuum curettage device of claim 1, wherein said reservoir is cylindrical; one filter partition is of tubular shape coaxially mounted within said cylindrical reservoir; said cylindrical reservoir being closed at one end thereof except for the connection to said vacuum hose and having an insert or plug in said inlet thereof

with a central bore to receive said tubular filter partition; said plug having, outside said central bore, a smaller open passage to the interior of said cylindrical reservoir and a larger passage partly surrounding the central bore and communicating with the interior of said cylindrical reservoir through a filter partition in said larger passage; and said curette being fitted eccentrically into said rotatable lid so as to communicate with one or the other of the said passages.

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