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SPUTUM CONTAINER

2,301,781

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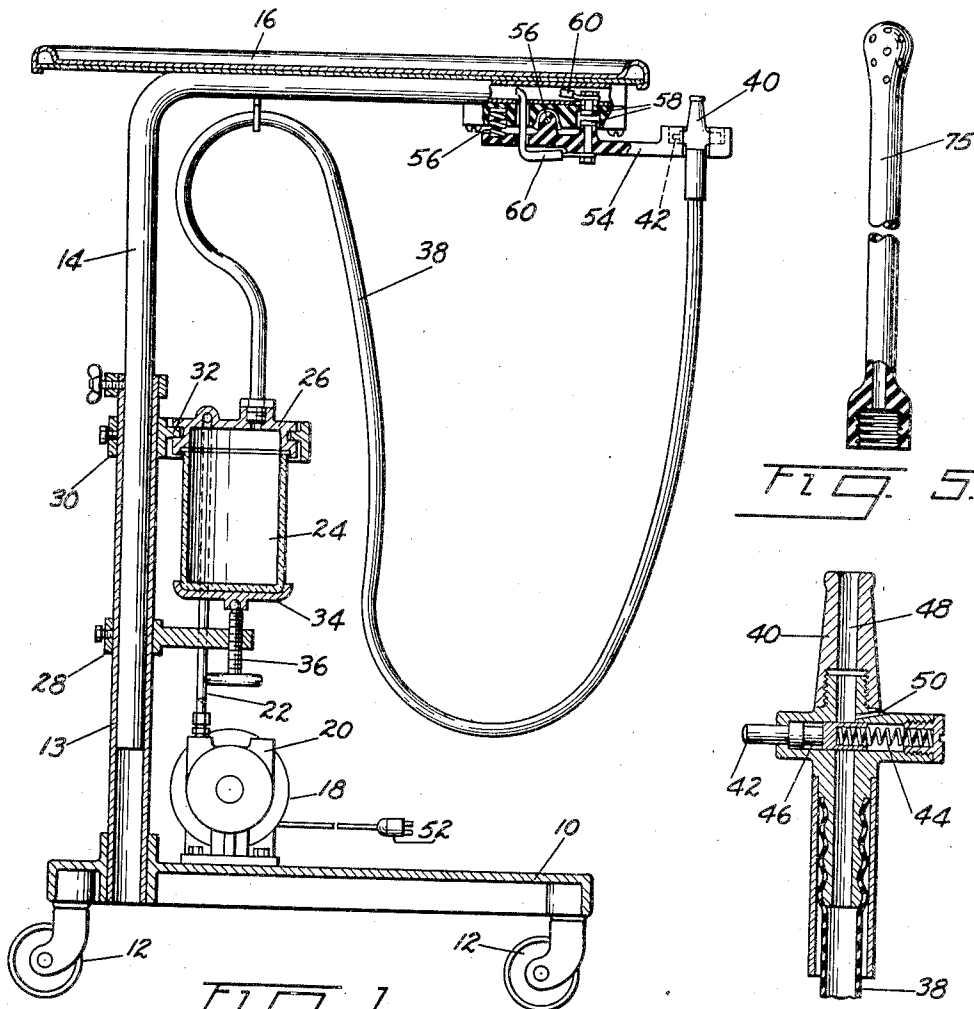


FIG. 1.

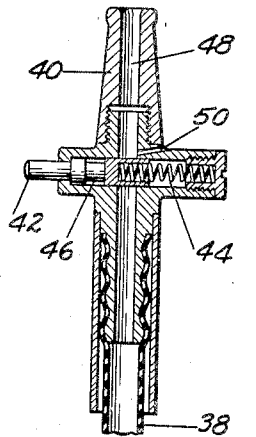
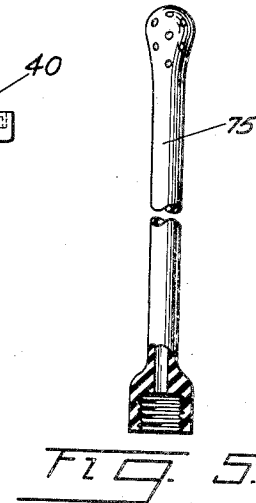


FIG. 2.

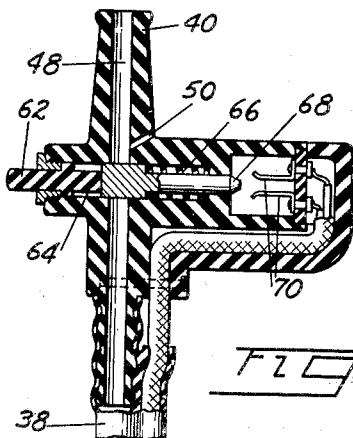


FIG. 3.

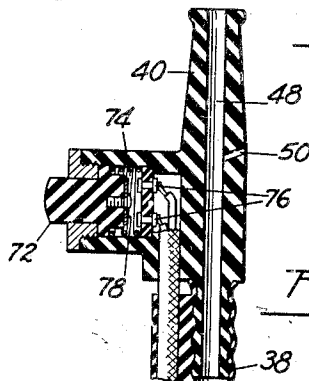


FIG. 4.

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## UNITED STATES PATENT OFFICE

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## SPUTUM CONTAINER

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3 Claims. (Cl. 4—258)

This invention relates to improvements in hospital or medical apparatus and particularly to improvements in liquid drainage apparatus adapted for use by hospital patients.

The invention may be embodied in sputum 5 collecting or drainage apparatus and by substituting for the sputum receiving nipple a liquid collecting nipple of a different character the apparatus may be employed to drain abscesses, wounds, or the like.

An object is to provide a liquid drainage collector such as a sputum collector which may be employed by a patient without requiring the user to shift position to employ the apparatus. Many patients in hospitals experience difficulty in the expectoration of sputum due to the difficulty of moving to a position suitable for expectorating. This improved sputum collector may be employed by the user from any position. The user may employ the device from a prone flat-on-the-back 20 position without any movement of the body or head. By merely changing the liquid collecting nipple the apparatus may be employed by surgeons to drain a wound, abscess, gland or other area of the body of a patient. Hereinafter throughout the specification the device is referred to as a sputum collector but it is understood that by substituting for the mouth piece nipple a drainage collector nipple of the type 25 suitable for collecting liquid drainage elsewhere the device may be employed equally well for collection of such other liquid drainage.

My improved sputum collector is provided with a nipple mouth piece and mechanism which assists the user in expectorating sputum. With certain diseases sputum is expelled with difficulty and clings tenaciously to the membranes. Use of this machine assists in its expectoration.

The construction embodying the invention is simple. It is easy to use and may be connected with a suitable source of power to be always available for use and when not in use it is not consuming any power. It may be readily moved from one place to another where desired for use and it is sanitary.

A meritorious feature of this invention is that my improved sputum collector is provided with a sputum delivery conduit communicating at one end with the interior of a container and fitted at the opposite end with a nipple mouth piece 50 which is so supported as to be conveniently grasped by a patient and inserted in the mouth for use. Vacuum producing means, which may be in the form of an electrically driven vacuum pump, communicates with the interior of the 55

container and is controlled by a switch. The arrangement may be such that upon the patient picking up the nipple mouth piece the switch automatically responds to cause the vacuum producing means to function to create a depression within the container and throughout the conduit and mouth piece.

A valve may be provided controlling communication through the conduit between the 10 mouth piece and container and the switch may be constructed to cooperate with this valve to produce a depression within the container upon the opening of the valve. The entire assembly is so constructed and arranged that only the minimum amount of exertion upon the part of 15 the patient is required.

Various other objects and meritorious characteristics will appear from the following description, appended claims, and accompanying drawing, wherein:

Figure 1 is an elevation partly in section of a device embodying my invention.

Fig. 2 is a vertical sectional view through the nipple mouth piece,

Fig. 3 is a vertical sectional view through the nipple mouth piece showing a modified form of construction as compared with the structure of Fig. 2, and

Fig. 4 is a vertical sectional view through the 30 nipple mouth piece showing a second modified form of construction, and

Fig. 5 illustrates a liquid collecting nipple of a catheter type.

This invention is so designed as to require a minimum amount of movement upon the part of the patient to use the device. It is mounted upon a wheeled support in order that it may be moved conveniently from one place to another. The vacuum producing means is driven by an electric motor which may be plugged into a convenient wall switch.

The construction comprises a portable stand having a platform 10 provided with wheels 12 and an upright tubular standard 13. A rod 14 45 is adjustable vertically within the standard. This rod carries a tray 16. Mounted upon the platform is an electric motor 13 and a vacuum pump 20. The pump communicates through a conduit 22 with a liquid container which comprises a bottom portion 24 and a cover 26. A gasket 23 is interposed between the cover and bottom portion to form a tight seal.

The container is supported by a lower bracket 28 and an upper bracket 30. The upper bracket has a clamping portion provided with a part 32

which engages within a groove in the cover to support the cover. The lower bracket carries a plate 34 carried by an adjustable screw 35 whereby the bottom portion 24 of the container may be raised and lowered with respect to the cover. The container might be formed of glass or any other suitable material. Through operation of the screw it is possible to remove the bottom portion of the container for discharge of its contents.

A liquid conduit 33 communicates at one end with the interior of the container through an apertured boss on the cover as shown in Fig. 1. The opposite end of the conduit is provided with a nipple 40, which may be sputum collecting nipple as illustrated in Figs. 1 to 4 or a liquid collecting nipple of the catheter type as in Fig. 5. The conduit is flexible for convenient use. The nipple mouth piece 40 is provided with a manually operable valve element 42 held by a spring 44 in the normally closed position. Upon depression of the element 42 against the tension of the spring the cut away portion 46 of the valve element is positioned to open the passage-way 48 through the mouth piece to the action of a depression established within the container 24. The extreme nipple portion may be removable as shown for sterilization.

The electric motor may be driven from the power line. It is shown as provided with a wall plug connection 52. The connection with the motor is controlled by a switch. The switch construction of Fig. 1 is automatically responsive to removal of the mouth piece end of the conduit from its support to close the circuit to start the motor.

In Fig. 1 there is shown a bracket arm 54 pivotally supported at 56 below the tray 16. The outer end is fork shaped so as to receive and support the nipple mouth piece. There is a spring 58 tensioned to swing the bracket arm to close the switch through the contact terminals 58 of the circuit leads 63. The weight of the nipple mouth piece and conduit is such as to overcome the tension of the spring and when the mouth piece end of the conduit is supported as shown in Fig. 1 upon the bracket arm the switch is open. Upon removal of the conduit from the support the spring 58 closes the switch and circuit and energizes the motor to cause the vacuum pump to produce a depression within the container which depression communicates through the conduit 33 with the mouth piece.

In the construction shown in Fig. 2 the valve 42 must be manually operated to establish a suction at the intake end of the mouth piece. The bleed aperture 59 is for the purpose of preventing the establishment of such a suction as to cause the tongue or lips of the user to be held to the mouth piece. The suction, however, is such that sputum is withdrawn from the mouth of the user and through the delivery conduit 33 into the container.

In Fig. 3 the electric switch control is incorporated to respond as a function of the control valve. In this construction the control valve 62 is manually operable. It has a cut away portion 64 which upon registering with the passage-

way through the mouth piece establishes communication between the container and the intake end of the mouth piece. This valve is held normally closed by a spring 66. It carries a switch element plunger 68 which, upon movement sufficiently to open the valve, will close the electric circuit through the contact terminal 70.

In Fig. 4 the nipple is not provided with any control valve. When the electric circuit is closed and a depression established within the container suction is established in the intake end of the nipple. The switch in this construction is incorporated within the nipple mouth piece. There is a manually depressible switch element 72 held normally open by a spring 74 which carries a metal strip 78 adapted upon depression of the element 72 counter the tension of the spring to bridge the gap between the switch terminals 76 closing the switch and causing the motor to drive the pump to create a depression within the container.

In Fig. 5 the nipple 75 is a catheter type used widely in medical practice. It is not provided with a control valve. Such nipple might be substituted for the nipple of Fig. 1 wherein the vacuum is instituted upon removal of the nipple from the switch control support arm.

What I claim is:

1. In apparatus of the character described, in combination, a liquid container, a liquid delivery conduit communicating with the container and provided with a liquid collecting nipple, a support for the mouth piece end of the conduit, mechanism automatically responsive to removal of the conduit from the support to produce a depression within the container, said mechanism responsive to positioning of the conduit upon the support to terminate said depression.

2. In apparatus of the character described, a liquid container, a vacuum pump communicating with the container, an electric motor coupled with the pump to drive the pump, an electric switch controlling the motor, a liquid delivery conduit communicating with the container and provided with a liquid collecting nipple, a support for the nipple end of the conduit controlling the switch mechanism adapted to open the switch upon positioning of the conduit within the support and adapted to close the switch upon removal of the conduit from the support.

3. In a liquid discharge collector, in combination, a portable wheeled stand, a liquid sputum container mounted thereon, a vacuum pump communicating with the container and mounted upon the stand, an electric motor coupled with the pump for driving and mounted on the stand, a liquid delivery conduit communicating with the container and provided with a liquid collecting nipple, a valve controlling communication through the conduit, a support for the nipple end of the conduit, a switch controlling the electric motor coupled with the nipple support and adapted to be held open when the nipple is mounted on the support, said switch adapted to close upon removal of the nipple from the support.

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