

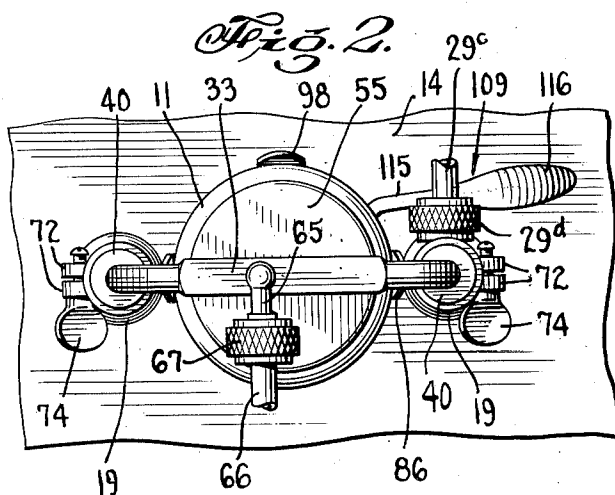
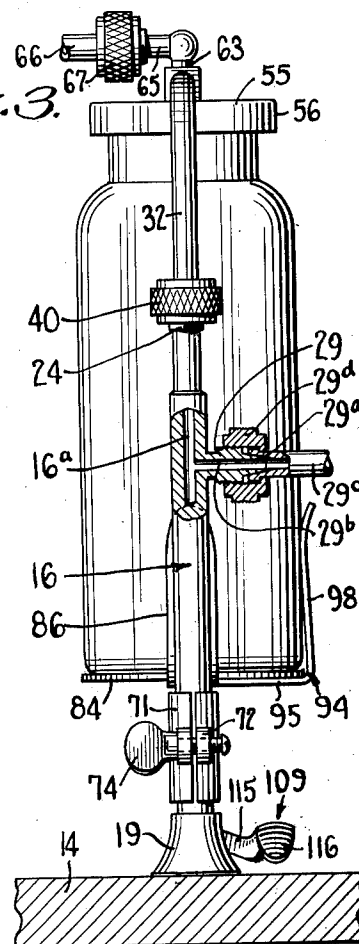
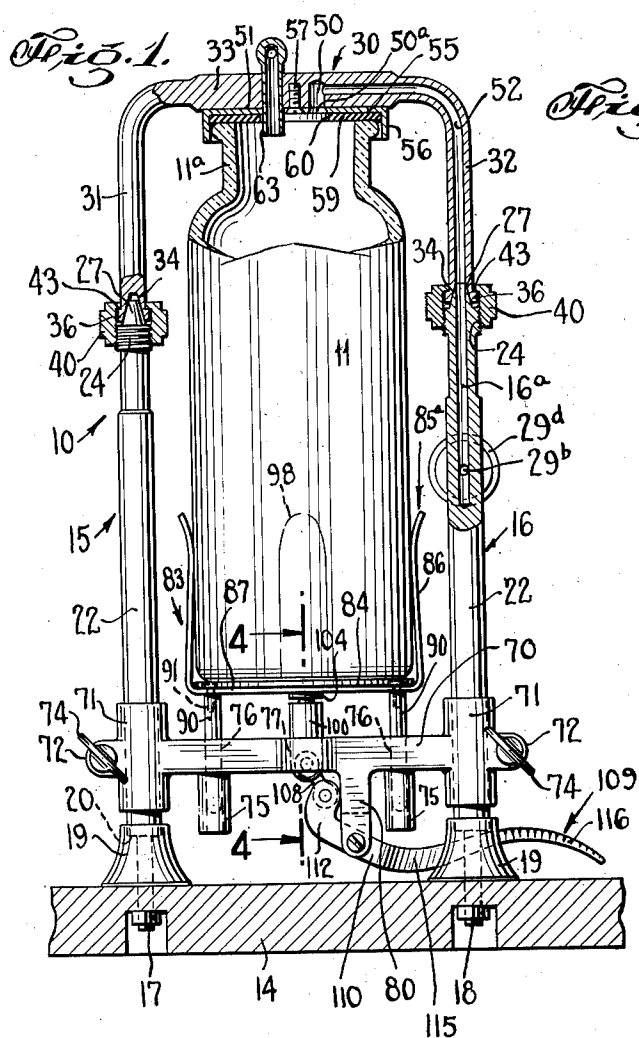
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SUCTION APPARATUS

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SUCTION APPARATUS

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This invention relates to suction apparatus.

Heretofore it has been difficult to remove a vacuum bottle from a suction and anaesthesia apparatus and replace the same with another, as for example, when the bottle fills up during an operation. It is therefore, an object of this invention to overcome this difficulty by providing an improved holder for the vacuum bottle with a quick releasing means operable by pressing a simple lever, the construction of the holder being such, furthermore, that neither a special nor another bottle of the same size is essential, so that any small sized bottle may be substituted.

A further object of this invention is to provide a bottle holder of the character described, which is readily adjustable for receiving bottles of various sizes and holding the same firmly to permit a substantially perfect suction.

Heretofore furthermore, when a top washer covering the mouth of the bottle became worn, perfect anaesthesia was impossible to obtain, and it is hence a further object of this invention to provide for fine adjustment for taking up looseness and raising the base of the holder to make the bottle fit tight and providing a hermetic seal.

Still another object of this invention is to provide a compact and rugged bottle holder of the character described, which shall comprise comparatively few and simple parts, be relatively inexpensive to manufacture, easy to assemble and manipulate, and nevertheless practical and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a front elevational view of a bottle holder and bottle embodying the invention, with parts broken away to show the interior construction;

Fig. 2 is a top plan view of the structure shown in Fig. 1;

Fig. 3 is a side elevational view of the structure shown in Fig. 1, with parts broken away to show the interior construction; and

Fig. 4 is a cross-sectional view taken on line 4-4 of Fig. 1.

Referring now in detail to the drawing, 10 designates a holder embodying the invention, for supporting a vacuum bottle, and either forming part of a suction and anaesthesia apparatus or for use for nose or mastoid surgery or therapy, and the like uses.

The holder 10 may be mounted on any suitable base 14 and comprises a pair of vertical, parallel, spaced elongated members 15 and 16 having reduced screw threaded, lower end portions 17 and 18 passing through suitable openings in the base and receiving nuts for attaching said members to said base. The screw threaded portions 17 and 18 may project through members 19 mounted on the upper side of the base and having suitable openings for receiving said screw threaded portion. The shoulders 20 formed by said reduced screw threaded portions contact shoulders formed adjacent the upper ends of said members 19, whereby said members 15 and 16 are rigidly fixed to said base. Said members 15 and 16 may be of substantially similar outer shape, and are provided with cylindrical portions 22 and screw threaded portions 24 adjacent the upper ends thereof. Extending from said screw threaded portions 24, are upwardly extending, conical or tapering portions 27, for the purpose hereinafter appearing.

The upstanding member 16 is formed in the upper portion thereof, with an axial passage 16a extending to the conical end thereof. Extending from said member 16, at right angles thereto and in a plane perpendicular to the plane of said members 15 and 16, is a projection 29 formed with external screw threads, and a tapering end portion 29a. Said projection 29 is formed with an

axial passage 29b communicating with the passage 16a, and is adapted to be attached to any suitable tube 29c (which may pass to a filter and compressor, not shown), by means of a screw coupling 29d engaging the screw threaded portion 29.

Mounted on the upper end portions 27 of said members 15 and 16 is an inverted U-shaped member 30 having parallel arm portions 31 and 32, and a top interconnecting portion 33. The arms 31 and 32 are formed with conical openings 34, at the lower ends thereof, receiving said conical portions 27. The lower ends of said arms are further formed with circular flanges 36 and rotatably mounted thereon are screw couplings 40 having flange portions 43, engaging said circular flanges 36. The screw couplings are further formed with internally screw threaded portions adapted to be screwed to the threaded portions 24 for firmly attaching the member 30 to the members 15 and 16, with the arms 31 and 32 in alignment with said members.

It will be noted that said arms 31 and 32 are of substantially cylindrical shape. The interconnecting portion 33, however, may be of square cross-section, and is formed with a vertical opening or passage 50 extending to the undersurface 51 thereof. The arm 32 as well as a part of the portion 33 may be formed with a passage 52 interconnecting said opening 50 with the passage 16a. Attached to said undersurface 51 of said portion 33 is a circular cap or closure member 55 having a downwardly extending annular flange 56, and an opening 50a registering with said opening 50, said cap being attached to said portion 33 by means of a central screw 57, or in any other suitable manner.

It will be noted that the portion 33 is diametrically disposed with respect to the cap 55. Received within said cap is a circular washer 59 of rubber, or any other suitable material, and having a central opening 60, the outer periphery of said washer preferably frictionally engaging the inner surface of the flange 56 and being thereby retained within said cap. Said portion 33 may be formed with a vertical through passage 62 eccentrically disposed with respect to the cap 55; and extending through said opening and through said cap, and fixed to the member 33 by solder or in any other suitable manner, is a pipe 63. Said pipe 63 may project through the opening 60 in the washer and somewhat below the lower surface of said washer 59. The upper end of the pipe 63 projects above the member 33; and extending forwardly therefrom at right angles to the plane of the members 15 and 16, is a pipe portion 65 adapted to be attached to a suitable tube 66 (for example a Yankauer tube, not shown) by means of a screw coupling 67. It will be noted that the couplings 29d, 40 and 67 are all similarly constructed

and employ no washers, although suitable washers or packing may be employed.

For supporting the bottle 11 there is provided a member 70 disposed in the plane of the members 15 and 16 and provided with vertical, split, tubular portions 71 slidably receiving the portions 22 of said members 15 and 16. The split tubular portions 71 are provided with apertured ears 72 for receiving thumb screws 74 adapted to clamp the split tubes to said portions 22 in any adjusted position. It will now be understood that upon loosening the screws 74, the member 70 may be raised or lowered, and said screws may then be tightened for fixing the member 70 against movement. Said member 70 is further provided with a pair of spaced, symmetrically disposed, downwardly extending, tubular extensions 75 and through openings 76 coaxial with said extensions. Said member 70 is further formed with a central vertical opening 77 disposed mid-way between the tubular extensions 75. Extending downwardly from said member 70 and disposed between the opening 77 and one of said tubular members 75, is a lug or projection 80 having a slot at the lower end thereof, for the purpose hereinafter appearing.

Slidably mounted on said member 70 is a platform 83 comprising a flat, circular disc 84 formed with a central opening 85. Attached to said disc 84 is a U-shaped member 85a having a pair of upstanding arms 86 and an interconnecting portion 87 contacting the underside of said disc 84 and formed with a central opening 87a, smaller than and concentric with the opening 85 in said disc. For attaching the portion 87 of said member 85a to said disc, the latter is provided with a pair of countersunk openings registering with openings at the outer ends of said portion 87 and aligned with the openings 76 in the member 70. Slidably received within said openings 76 are pins 90 having screw threaded openings in the upper ends thereof registering with the openings in the disc 84 and in said portion 87, and adapted to receive screws 91 which serve to fix said pins 90 to said portion 87 and disc 84. The heads of the screws may be received within the countersunk openings in the disc to leave the top surface of said disc smooth.

There is also attached to said disc 84 an angle shaped member 94 having an arm 95 contacting the underside of said disc and disposed at right angles to said portion 87. Extending from said portion 95 is an upwardly extending portion or arm 98 similar to the arms 86. The arm 95 may be attached to the disc by suitable screws received in countersunk openings in the disc, or in any other suitable manner. It will now be understood that the bottle 11 may be mounted on the disc 84 and received between the arms 86 and 98 which are preferably somewhat resili-

ent for frictionally gripping the bottle. The neck portion 11a of the bottle, as illustrated in Fig. 1 of the drawing, is adapted to be received within the flange 56 of the cap 55 for contacting the undersurface of the washer 59.

For moving the platform 83 upwardly, or downwardly, there is slidably mounted within the opening 77 a rod or member 100 having a screw threaded opening 101 at the upper end thereof. Mounted on said portion 87 and extending through opening 87a is a screw 102 having an enlarged head 103 formed with a kerf and received within the opening 85 in the disc 84 and resting on the said portion 87. The screw 102 is further provided with a flange 104 spaced from and parallel to the head 103 and contacting the underside of said portion 87. Extending from said head 104 is a screw threaded portion 105 engaging the threads of the opening 101 in member 100. It will now be noted that the screw 102 is rotatably and non-slidably mounted on the member 87 and may be turned by means of a screw-driver engaging the kerf in the head 103 to cause sliding movement of the member 100, the latter being prevented from rotating with said screw, in the manner hereinafter described.

The lower end of said member 100 is formed with a slot 106 to which there is pivoted, as for example, on a transverse pin 107, a link 108. Pivoted to the lower end of projection 80 as on pin 11 is a lever 109 provided with a portion 110 extending within the slot at the lower end of said projection.

Extending from said portion 110 to one side of projection 80 is an upwardly bifurcated member 112 receiving and pivoted to the lower end of the link 108, as for example, by means of a pin 113. Extending from said portion 110 to the opposite side of projection 80, is a portion 115 curved out of the plane of the members 15 and 16 and terminating in a handle portion 116 disposed at one side of said member 16. It will now be noted that the member 100 cannot rotate by reason of the link connection, so that rotation of the screw 103 will serve to raise the platform 83 whereby fine adjustments may be made, as for example, when the washer 89 becomes worn or is replaced by another washer.

As illustrated in Fig. 1 of the drawing, the lever 116 is depressed and the end portion 112 thereof is raised to maintain the member 100 and the platform 83 in lifted position. Upon raising the lever 116, link 108 and member 110 are pulled downwardly for moving the platform 83 to bottle releasing position.

The operation of the device will now be understood. Any suitable compressor may be attached to the tube 29c for pumping air from the bottle 11, and a Yankauer or other suction tube for the patient attached to pipe 65. For mounting the bottle to the holder,

the handle 116 is first lifted to lower the platform 85a. The member 70 may then be moved to the proper position by manipulating the finger screws 74. The bottle may then be placed on said platform and the handle depressed for clamping the upper end or mouth of the bottle firmly against the washer 59. As stated above, for finer adjustments the screw 103 may be manipulated to obtain a hermetic seal. Vacuum may be created within the bottle by removing the air therefrom through the passages 50, 52, 16a and 29b.

The top member 30 may be readily removed for cleaning purposes by properly manipulating the couplings 40 and 41. Obviously, bottles of any size may be used since the member 70 may be raised a considerable distance. The member 70 is first adjusted to such position that the bottle may be placed on the platform 83 with the upper edge thereof just below the lower edge of the flange 56. The manipulation of the lever 109 will then serve to firmly clamp the open end of the bottle to the washer.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made of the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing, is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A bottle clamp comprising an elongated member, a member slidably mounted thereon, means for attaching said slidably mounted member to said elongated member in adjusted position, a bottle platform slidably and non-rotatably mounted on said slidably mounted member, and means on said slidably mounted member for causing sliding movement of said platform.

2. A bottle clamp comprising an elongated member, a member slidably mounted thereon, means for attaching said slidably mounted member to said elongated member in adjusted position, a bottle platform slidably and non-rotatably mounted on said slidably mounted member, and a lever on said slidably mounted member for causing sliding movement of said platform.

3. A bottle clamp comprising a pair of spaced, parallel members, a member mounted for sliding movement on said parallel members, a bottle platform slidably mounted on said last member, a lever pivoted to said last named member, and a link interconnecting one end of said lever with said platform.

4. A bottle clamp comprising a pair of spaced, parallel members, a member mounted for sliding movement on said parallel members, a bottle platform slidably mounted on said last member, a lever pivoted to said last member, a link interconnecting one end of said lever with said platform, and an inverted U-shaped member having a pair of arms aligned with said pair of parallel members, and coupling means for attaching the lower ends of said arms to the upper ends of said parallel members.

5. A vacuum bottle clamp comprising a base, a pair of spaced, parallel members attached to said base, a transverse member disposed between said parallel members and having portions at the ends thereof slidably receiving said parallel members, means for fixing said last member to said parallel members in adjusted position, said transverse member being provided with a central opening and a projection offset from said central opening, a rod slidably mounted within said central opening and disposed parallel to said pair of parallel members, a lever pivoted immediately the ends thereof to said projection, a link interconnecting said lever with said rod, and a platform for a bottle mounted on said rod.

6. A vacuum bottle clamp comprising a base, a pair of spaced, parallel members attached to said base, a transverse member disposed between said parallel members and having portions at the ends thereof slidably receiving said parallel members, means for fixing said last member to said parallel members in adjusted position, said transverse member being provided with a central opening and a projection offset from said central opening, a rod slidably mounted within said central opening and disposed parallel to said pair of parallel members, a lever pivoted immediately the ends thereof to one end of said projection, a link interconnecting one end of said lever with one end of said rod, a platform for a bottle mounted on the upper end of said rod, and a pair of parallel pins attached to said platform, and said transverse member being formed with a pair of openings slidably receiving said pins.

7. A bottle clamp comprising a base, a pair of parallel spaced members attached to said base at the bottom ends thereof and projecting upwardly therefrom, a member attached to the upper ends of said parallel members and interconnecting the same, a cap attached to the last member, a transverse member having the ends thereof slidably engaging said parallel members, a platform slidably and non-rotatably mounted on said transverse member, means on said transverse member for causing sliding movement of said platform.

8. A bottle clamp comprising a base, a pair of parallel spaced members attached to said

base at the bottom ends thereof and projecting upwardly therefrom, a member attached to the upper ends of said parallel members and interconnecting the same, a cap attached to the last member, a transverse member having the ends thereof slidably engaging said parallel members, a platform slidably and non-rotatably mounted on said transverse member, means on said transverse member for causing sliding movement of said platform, and a plurality of spring fingers extending upwardly from said platform for gripping the bottom end of the bottle.

9. A bottle clamp comprising a pair of parallel members, an inverted U-shaped member having arms, and an interconnecting portion, screw coupling means for attaching the ends of the said arms to the adjacent ends of said parallel members, one of said parallel members having a projection formed with an axial passage, said parallel member having an axial passage communicating with said first mentioned passage and extending to the upper end of said parallel member, a bottle cover attached to said interconnecting portion, the arm of said U-shaped member attached to said parallel member being formed with an axial passage communicating with the axial passage in said parallel member, and a part of said interconnecting portion, and said cover being formed with passages communicating with the passage in said arm.

10. A bottle clamp comprising a pair of parallel members attached at the lower ends thereof to a base, a transverse member having the ends thereof engaging said parallel members, a member parallel to and disposed between said pair of parallel members slidably and non-rotatably mounted on said transverse member and formed with a screw threaded opening, and a screw screwed to said member, and a platform slidably and non-rotatably mounted with respect to said transverse member, and rotatably and non-slidably engaging said screw.

11. A bottle clamp comprising a pair of parallel members attached at the lower ends thereof to a base, a transverse member having the ends thereof engaging said parallel members, a member parallel to and disposed between said pair of parallel members slidably and non-rotatably mounted on said transverse member and formed with a screw threaded opening, and a screw screwed to said member, and a platform slidably and non-rotatably mounted with respect to said transverse member, and rotatably and non-slidably engaging said screw, and a lever pivoted to said transverse member, and a link interconnecting said lever with said slidably mounted member.

12. A bottle clamp comprising a non-rotatably mounted member having a screw threaded portion, a member screwed to said por-

tion, and a bottle platform mounted for sliding movement and rotatably and non-slidably engaging said screw.

13. In combination, a base, a pair of parallel members mounted thereon and extending upwardly therefrom, a transverse member having split tubular portions at the ends thereof slidably receiving said parallel members, means for clamping said split tubular portions to said parallel members, said transverse member being formed with a downwardly extending projection and a central opening, a member slidably mounted within said central opening and having a slot in the lower end thereof, a lever pivoted mediate the ends thereof to the lower end of said projection, a link pivoted at one end thereof to said lever and having the other end thereof received within said slot and pivoted to the lower end of said slidably mounted member, said slidably mounted member being formed with a screw threaded opening, a screw screwed to said opening, and a bottle platform rotatably and non-slidably engaging said screw, and means for slidably and non-rotatably connecting said platform to said transverse member.

14. A bottle clamp comprising an elongated member, a member slidably mounted thereon, means for attaching said slidably mounted member to said elongated member in adjusting position, a bottle platform slidably and non-rotatably mounted on said slidably mounted member, and means on said slidably mounted member for causing sliding movement of said platform, and means on said elongated member for engaging the mouth of the bottle.

In testimony whereof I affix my signature.
EDWARD J. SOVATKIN.