

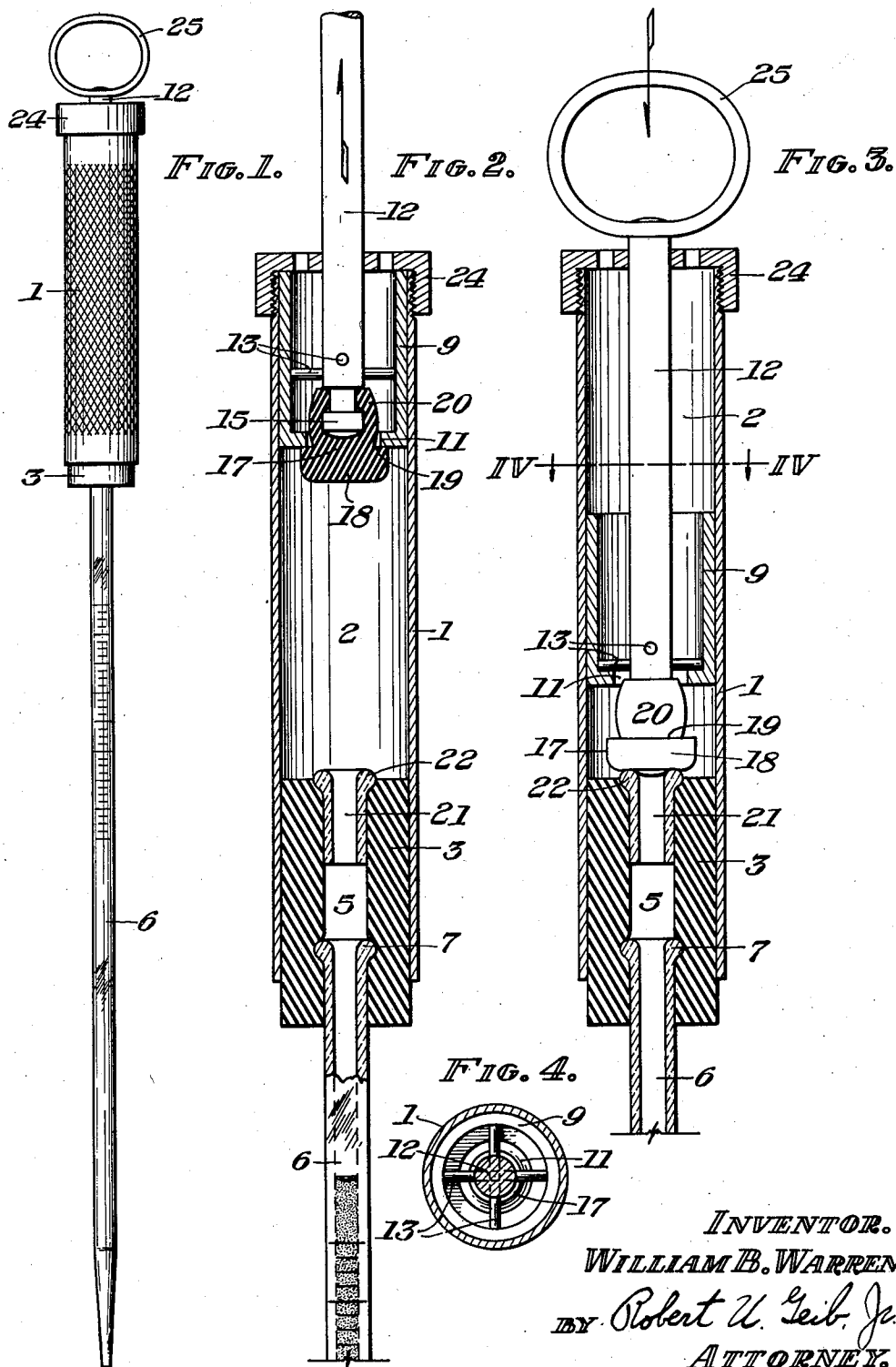
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W. B. WARREN

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PIPETTE FILLER

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INVENTOR.
WILLIAM B. WARREN
BY Robert U. Leib, Jr.
ATTORNEY.

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PIPETTE FILLER

William B. Warren, Mount Lebanon, Pa., assignor
to Fisher Scientific Company, Pittsburgh, Pa.

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2 Claims. (Cl. 221-148)

This invention relates to pipetting in which liquids are drawn into a small glass column or pipette, usually by the application of suction to one end of the pipette by the mouth of the operator. It frequently happens that the liquid to be drawn into the glass column or pipette is noxious, or unpleasant to taste; and in such cases it is desired to eliminate the necessity of application of the mouth of the operator. There are many devices well known to the prior art which are calculated to accomplish this, but all of those of which I am aware have objectionable features. Some of them employ collapsible rubber bulbs which rapidly deteriorate. Other devices embody complex instrumentalities and are not only expensive to manufacture but are difficult to operate.

It is among the objects of the present invention to provide an inexpensive and simply operated pipette filler which enables the successful pipetting of liquids without the application of one end of the pipette to the mouth of the operator.

Another object is the provision of a device of the class described which is rugged and durable in service.

The invention, then, comprises the features hereinafter fully described and as particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail a certain illustrative embodiment of the invention, this being indicative of but one of a number of ways in which the principles of the invention may be employed.

In said drawing:

Figure 1 is an elevation of the device of the invention as it is applied to a pipette of conventional design;

Figure 2 is an enlarged fragmentary view partly in section;

Figure 3 is a view similar to Figure 2 but disclosing the instrumentalities thereof in another stage of operation; and

Figure 4 is a sectional view on the line IV-IV of Figure 3.

Referring more particularly to the drawing, the numeral 1 designates a cylindrical metallic barrel having a smooth interior bore 2. One end of the cylindrical barrel 1 is provided with a plug 3 having a bore or port 5 extending therethrough.

The outer end of the port 5 is such as to readily accommodate and establish proper communication with a pipette, designated hereinafter at 6; and for this purpose it is desirable that the material of the plug 3, or at least that portion thereof of which comprises the wall of the bore or port

5, is constructed of a resilient material, such as rubber. When so constructed, the free end 7 of the pipette 6 is firmly gripped and a seal established.

Disposed within the smooth interior bore 2 of the cylindrical metallic barrel 1 is a freely reciprocable piston 9, the head of which faces the plug 3 and is provided with a central aperture or port 11. The piston 9 is adapted to be reciprocated in the smooth interior bore 2 of the cylindrical barrel 1 by a piston rod 12, which extends entirely therethrough and through the central aperture or port 11 and is adapted for relative movement with respect thereto. A pair of cross bars 13 is carried by the piston rod 12 for limiting the movement in one direction of the piston rod 12 through the central aperture or port 11 in the head of the piston 9.

The inner end of the piston rod 12 which extends through the piston 9, and which is therefore most adjacent the plug 3, is provided with a tit 15 to which there is connected a resilient valve 17 which seals the aperture or port 11 in the piston 9. In the present instance, the valve 17 is shown as comprising an element having a substantially flat head 18 on its outer end, and provided on its inner end with a substantially flat annular seat 19 which is adapted to close the aperture or port 11 in the piston 9.

From the foregoing it will be seen that when the piston rod 12 is moved downwardly into the smooth interior bore 2 of the cylindrical barrel 1, the valve seat 19 will move away from the piston 9 and when this movement is reversed, the valve seat 19 will seal the aperture or port 11 in the piston 9 and thereby enable the said piston to provide suction within the interior of the cylindrical barrel 1.

The remainder of the valve 17 comprises a spherical portion 20 which is connected to the tit 15 on the piston rod 12, and is of such size as will enable its free movement through the aperture or port 11 in the piston 9.

Referring more particularly to Figures 2 and 3 of the drawing, it will be noted that within the inner end of the bore 5 in the plug 3 there is provided a ferrule, designated at 21. This ferrule 21 provides a bead 22 which serves as a seat for the flat head 18 on the valve 17. When the piston rod 12 is moved upwardly in the cylindrical barrel 1, the piston 9 will also be moved upwardly, and the annular seat 19 on the valve 17 will close the port 11 in the piston 9, thereby providing for suction. When sufficient liquid has been drawn into the pipette 6, the piston rod 12

is moved even further out of the cylindrical barrel 1, whereby the meniscus of the liquid will overrun the desired mark on the pipette. Immediately the level of liquid has overtraveled the desired mark, the piston rod 12 is moved very rapidly downwardly into the cylindrical barrel 1, whereby the said piston rod carrying the valve 17 will overtravel the piston 9. This movement is continued until the flat head 18 on the valve 17 seats against the bead 22 on the upper end of the ferrule 21, at which time the liquid is maintained at exactly the proper level. By a very minute movement of the piston rod 12, the level of the liquid within the pipette may be adjusted with a fine degree of exactness. In order to secure the proper movement of the piston rod 12 within the cylindrical barrel 1, the end of the barrel opposite that which is provided with the plug 3 carries in screw threaded engagement a vented cap 24 having a central aperture through which the piston rod 12 extends. In addition, the outer of the piston rod 12 is provided with a ring 25 for occupancy by the index or other finger of the operator.

Due to its simplicity of construction and manner of operation, the device of the invention can be efficiently operated in a minimum of time; and is very rugged in service, as it embodies no in-

strumentalities which are either fragile or susceptible of material depreciation.

While I have shown and described one specific embodiment of the present invention, it will be seen that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention, as defined by the following claims.

I claim:

1. A pipette filler comprising a cylinder having an opening adapted for communication with one end of a pipette, a piston in said cylinder, said piston having a port, a piston rod extending through the port in said piston, and means carried on the extremity of said piston rod for opening and closing the opening in said cylinder and the port in said piston, said means being movable with respect to said piston.

2. A pipette filler comprising a cylinder having an opening adapted for communication with one end of a pipette, a piston in said cylinder, said piston having a port, a piston rod extending through the port in said piston, means carried on the extremity of said piston rod for opening and closing the opening in said cylinder and the port in said piston, said means being movable with respect to said piston, and means for limiting said movement.

WILLIAM B. WARREN.