

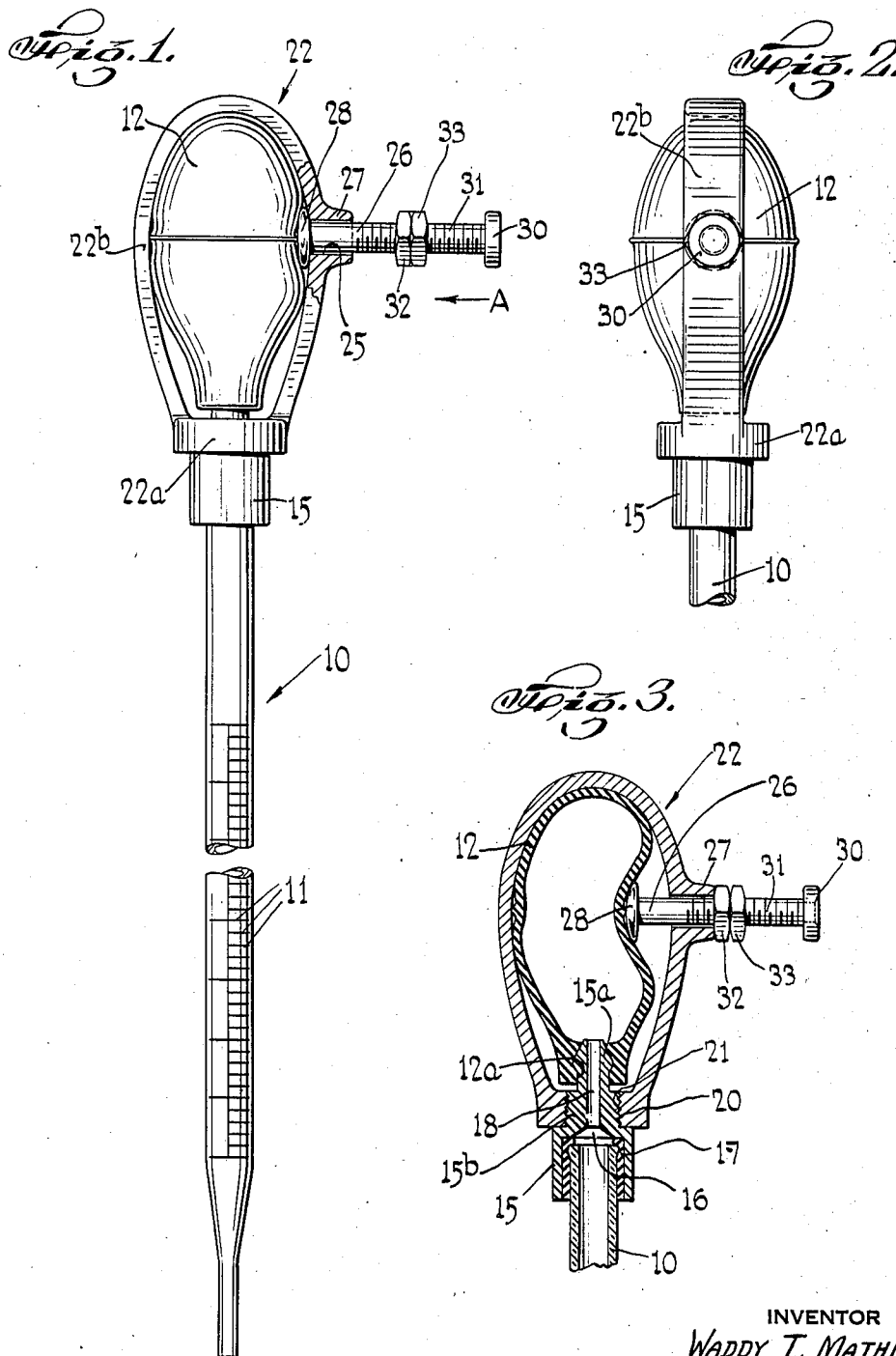
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PIPETTE

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PIPETTE

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This invention relates generally to pipettes and similar laboratory apparatus. More particularly my invention relates to the type of pipettes used for transferring or collecting measured quantities of fluids.

The principal object of my invention is to provide a novel device for use with pipettes and similar laboratory apparatus by means of which a predetermined constant quantity or quantities of fluid may be automatically drawn into the pipette and in which such constant quantity of fluid may be altered and regulated, in accordance with desired requirements.

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

In the accompanying drawing

Fig. 1 is a front elevational view, partly in section, of a pipette and automatic measuring device constructed in accordance with my invention;

Fig. 2 is a side elevational view of a portion thereof; and

Fig. 3 is a vertical sectional view of a portion of the apparatus shown in Fig. 1, and illustrating a step in the use thereof.

Referring now in detail to the drawing I have shown a pipette or tube 10 of the type customarily employed in laboratory work for transferring and collecting fluids and provided with suitable graduations 11 for measuring quantities of fluid drawn into the tube 10.

For creating a suction, in order to draw fluid into the tube 10, I employ a collapsible rubber bulb 12 of any suitable standard construction having a bottom aperture 12a communicating with the hollow interior thereof. The said bulb 12 is connected to the tube 10 by means of a nipple 15 having a tapered projecting portion 15a frictionally received and held in the aperture 12a and having an opening 16 provided with a resilient lining member 17 into which there is frictionally received, the upper end of the tube 10. An aperture 18 in the nipple 15 communicating with opening 16 and with the hollow interior of the bulb 12, completes the air passage-way, whereby upon collapse and release of the bulb 12 a suction will be created in the tube 10 to draw fluid therein.

The following means are provided for automatically creating a suction in the tube 10.

An intermediate portion 15b of the nipple 15 is provided with an externally threaded portion 20 designed to threadedly receive thereon the threaded aperture 21 in the bottom wall 22a of a frame 22. The said frame 22 comprises a wall

22b integral with the bottom wall 22a and extending upwardly therefrom in the form of a loop. The said loop substantially follows the contour of the outer surface of the bulb and is of such size as to snugly accommodate the said bulb 12 therein, when in non-collapsed condition, to form a housing therefor.

The wall 22b is provided with a through aperture 25 into which there is slidably mounted a shaft member 26. A portion of the wall 22b surrounding the aperture 25 may be provided with an extension 27 to form a better bearing surface for the shaft 26.

At one end of the shaft 26 and disposed between the inner surface wall 22b and the bulb is an enlarged head 28, so constructed and arranged that when the shaft 26 is slidably moved inwardly in the direction of the arrow A, the bulb 12, held in position by the frame 22, will be collapsed. Upon release of the shaft 26, the normal resilience of the bulb 12 will slidably restore the shaft 26 to its original position as in Fig. 1 of the drawing and at the same time a suction will be created to automatically draw fluid into the tube 10. A suitable finger piece 30 may be provided at the opposite end of the shaft 26 from that of the enlarged head 28 to facilitate the sliding movement of the shaft 26.

In accordance with my invention I have provided the following means whereby a predetermined and constant amount of fluid may be automatically drawn into the tube 10 and expelled therefrom, each time the shaft 26 is slidably moved to collapse and to release the bulb 12.

A portion of the shaft 26 is provided with threads 31 on which there is threadedly received a pair of nuts 32 and 33. It is therefore seen that the shaft 26 may be slidably moved in the direction of the arrow A only until the nut 32 strikes the wall portion 27. In other words, the length of the stroke of the shaft 26 is controlled by the position of the nut 32 on the shaft 26. The second nut 33 serves as a locknut to prevent displacement of the nut 32 from its selected position.

It is also noted that once the position of the nut 32 on the shaft has been selected in accordance with the amount of fluid it is desired to draw into the tube 10, repeated constant quantities of fluid may be quickly and automatically collected in the tube 10, by merely pressing the finger piece 30, to first slidably move the shaft 26 from the position shown in Fig. 1 to the position shown in Fig. 3 with the nut 32 in abutting relationship with the wall portion 27, and then

releasing said finger piece, to permit the bulb to expand to its normal size.

In view of the fact that the nuts 32 and 33 are threadedly received on the shaft 26 the volume of fluid drawn into the tube may be regulated as desired.

It should be noted that the use of an open frame or housing, such as shown at 22, provides for unrestricted access to the bulb 12, for drawing into the tube 10, or expelling therefrom, an amount of fluid which differs from the amount controlled by the setting of the adjustable nuts 32, 33, without disturbing the setting of the nuts.

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 in the embodiment above 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 described my invention, I claim as new and desire to secure by Letters Patent:

1. In a laboratory apparatus of the class described, the combination of a tube, a suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb and means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a unitary open looped frame for said bulb and a compressor unit mounted on said frame.

2. In a laboratory apparatus of the class described, the combination of a tube, a suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb and means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a frame partially enclosing said bulb and a compressor unit mounted on said frame, said compressor unit comprising a rod slidably supported in said frame, said partially enclosing frame permitting direct hand compression of the bulb, without disturbing the compressor unit.

3. In a laboratory apparatus of the class described, the combination of a tube, a suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb and means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a unitary open looped frame for said bulb and a compressor unit mounted on said frame, said compressor unit comprising a rod slidably supported in said frame and having an enlarged head portion adapted to engage said bulb and to compress the same upon sliding movement of said rod.

4. In a laboratory apparatus of the class described, the combination of a tube, a suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb, said member having a recess at one end for the reception of said tube and a projection at the other end for mounting said bulb, means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a unitary open looped frame

for said bulb, a compressor unit mounted on said frame, said compressor unit comprising a rod slidably supported in said frame and having an enlarged head portion adapted to engage said bulb and to compress the same upon sliding movement of said rod and a finger piece on said rod to facilitate the sliding movement thereof.

5. In a laboratory apparatus of the class described, the combination of a tube, a suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb, said member having a recess at one end for the reception of said tube and a projection at the other end for mounting said bulb, means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a housing for said bulb, a compressor unit mounted on said housing, said compressor unit comprising a rod slidably supported in said housing and an abutment member on said rod to limit the amount of sliding movement thereof to provide a constant amount of compression of said bulb.

6. In a laboratory apparatus of the class described, the combination of a tube, a rubber suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb, means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a housing for said bulb and a compressor unit mounted on said housing, said compressor unit comprising a rod slidably supported in said housing, an abutment member on said rod to limit the amount of sliding movement thereof to provide a constant amount of compression of said bulb, said abutment member being adjustably movable along said rod to regulate the stroke thereof and to thereby regulate the said constant amount of compression of said bulb.

7. In a laboratory apparatus of the class described, the combination of a tube, a rubber suction bulb, a member for interconnecting said bulb with said tube whereby a suction may be created in said tube upon compressing and releasing said bulb, means supported by said interconnecting member for causing said bulb to be compressed, said last named means comprising a housing for said bulb and a compressor unit mounted on said housing, said compressor unit comprising a rod slidably supported in said housing, an abutment member on said rod to limit the amount of sliding movement thereof to provide a constant amount of compression of said bulb and means for locking said abutment member in its selected adjusted position.

8. In a laboratory apparatus of the class described, the combination according to claim 6 in which said abutment member comprises a nut threadedly mounted on said rod.

9. In a laboratory apparatus of the class described, the combination according to claim 7 in which said abutment member comprises a nut threadedly mounted on said rod and in which the said locking means comprises a nut threadedly mounted on said rod.

10. In a laboratory apparatus of the class described, the combination according to claim 6, in which the housing only partially encloses the bulb, for direct hand manipulation of the bulb, without disturbing the setting of the adjustable abutment member of the compressor unit.

11. In a laboratory apparatus of the class de-

scribed, the combination of a removable tube and a pre-assembled compressor unit, said compressor unit comprising a suction bulb, a member for interconnecting said bulb with said tube, whereby a suction may be created in said tube by the compressing and releasing of said bulb, said interconnecting member having a recess at one end for the reception of said removable tube and a projection at the other end for mounting said bulb, and means supported by said interconnecting member for causing said bulb to be compressed.

12. In a laboratory apparatus of the class described, the combination of a removable tube and a pre-assembled compressor unit, said com-

pressor unit comprising a suction bulb, a member for interconnecting said bulb with said tube, whereby a suction may be created in said tube by the compressing and releasing of said bulb, said interconnecting member having a recess at one end for the reception of said removable tube and a projection at the other end for mounting said bulb, and means supported by said interconnecting member for causing said bulb to be compressed, said last named means including means for limiting the amount of compression of said bulb so that a constant predetermined quantity of fluid may be drawn into said tube.

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