Dec. 31, 1963 F. E. MARTIN 3,115,783

PUMPETTE

Filed Nov. 15, 1961

FIG. 3

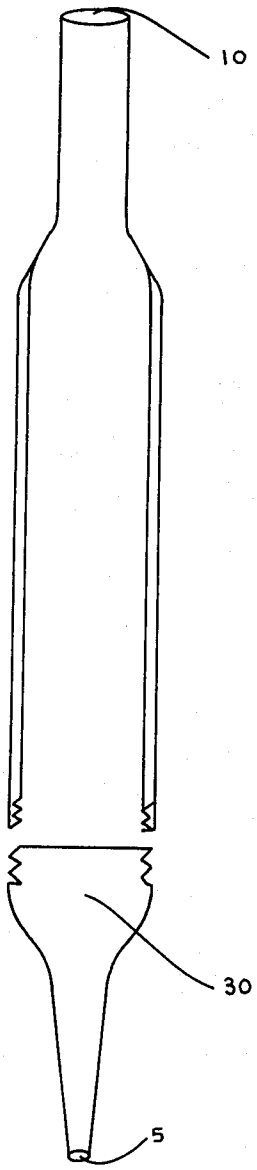


FIG. 2

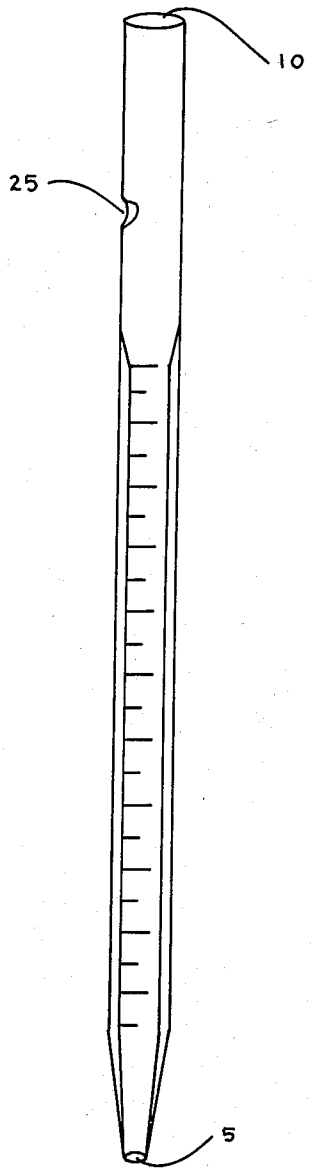
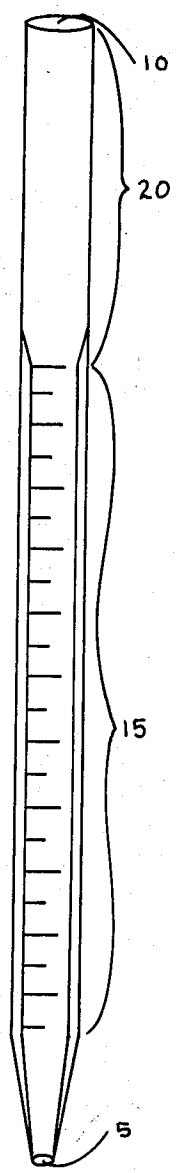


FIG. 1



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PUMPETTE

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4 Claims. (Cl. 73—425.6)

This invention relates to pipettes, burettes and, flexible bulbs used for pumping liquid handling devices, the pumpette being a unitary liquid handling device molded to include a flexible suction expulsion chamber.

Pipettes as presently employed consist of glass tubes, the delivery end being drawn to a narrow aperture, the outer tube body having calibrated indicia, liquids are drawn into the tube by suction of mouth or by a flexible bulb attached to the top end. Ordinarily the top end is then capped with a finger, retaining the liquid within, liquid being released by manipulating the open top permitting air to enter, thus, relieving the vacuum liquid flowing from the delivery end at will.

Pipettes, as described, as easily broken and present a problem when handling corrosive or toxic material that may be spilled or drawn into the mouth, rubber bulbs sometimes used as safe guards are clumsy and considered a complication, the usual tendency being to dispense with them favoring simpler means.

Synthetic plastic material complements the article of the present invention with the character of glass tubing and the resilience of rubber in unitary fashion, being unbreakable, self filling or may be filled by suction of mouth in ordinary manner overcoming defects and deficiencies. The new article may be shaped to suit varied liquid management problems by injection molding, blow molding or the like making the device useful as a pipette or burette, also as a pump, or a part of siphoning assembly for the visual inspection, measurement and transfer of liquids. Objects and advantages reside in new material of construction, details of structure, operation and multiusefulness. The invention is more fully described with three accompanying, drawn illustrations.

The new article consists essentially of a transparent tubular body illustrated in FIGURES 1, 2 and 3 preferably having a thinner walled, upper portion **20** terminating in an open end **10**, the upper portion being molded to permit deformation and resilient recovery and, may include a circular lateral opening **25** shown in FIGURE 2, for the attachment of extended tubing used for pumping liquid from separate storage containers.

The lower usually calibrated portion **15** is substantially incompressible to prevent deformation maintaining accuracy for volumetric measurements terminates in a constricted open delivery end **5**.

The pumpette may be filled when delivery end **5** is inserted beneath the surface of a liquid, either by suction of mouth applied to open top **10** or by compression expansion flexing upper portion **20** manually, closing opening **10** and/or **25** with finger tips or stopper, for a cycle of compression and suction.

Liquid thus filling the tube may be brought to coin-

cidence with calibration and delivered in desired quantity, or at desired rate by carefully permitting air to enter opening **10** or **25** relieving the vacuum there created allowing liquid to flow from delivery end **5**.

The pumpette may be equipped with extended tubing attached to opening **10** or **25** and used as a pump or a part of siphoning assembly, liquid being drawn into the device from separate storage containers, through the extended tubing. Delivery end **5** being equipped with a stopcock or pinchcock for the retention or delivery of liquid at will.

FIGURE 3 illustrates a removable end section **30** reason being ease for pulling a plug during fabrication when a central portion of the tube body is essentially larger than end portions.

All suitable modifications and equivalents may be resorted to, falling within the scope of the pumpette.

To further specify modification depending on auxiliary tubing and stopcock mechanism aforesaid and described.

In FIG. 2, extended tubing may be attached to lateral opening **25** or open end **10** through an inserted stopper. Extended tubing may be sealed to lateral opening **25** by heating, cementing or the like.

Delivery end **5** may be inserted in a length of flexible tubing that may be closed with the fingers or a mechanical clamp, effecting a stopcock, so as to retain or deliver liquid at will.

To accommodate fabrication it should be construed that the article may include enlarged tubular body structure intermediate both ends, a removable delivery end section, a lateral opening in the upper side wall thereof, thus suiting the device to singular requirements as they are presented.

What I claim is as follows:

1. A pumpette being unitary suction expulsion device for the visual inspection measurement and, transfer of liquids comprising a generally tubular body of transparent plastic material, having a calibrated thicker walled lower portion terminating in a constricted open delivery end and, a thinner walled resiliently compressible upper portion terminating in an open end.

2. A pumpette as set forth in claim 1 to include a circular lateral opening in an upper portion of resilient side wall thereof.

3. A pumpette as described in claim 1, the said tubular body having a larger diameter portion forming a measuring chamber intermediate both ends.

4. A pumpette as described in claim 1, with a larger diameter measuring chamber intermediate both ends, having a removable delivery end section.

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