No. 620,066.

Patented Feb. 21, 1899.

# P. WEISSGERBER.

## PIPETTE.

(Application filed Aug. 25, 1898.)

(No Model.)

Fig. 3.

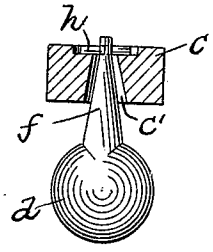



Fig. 1.

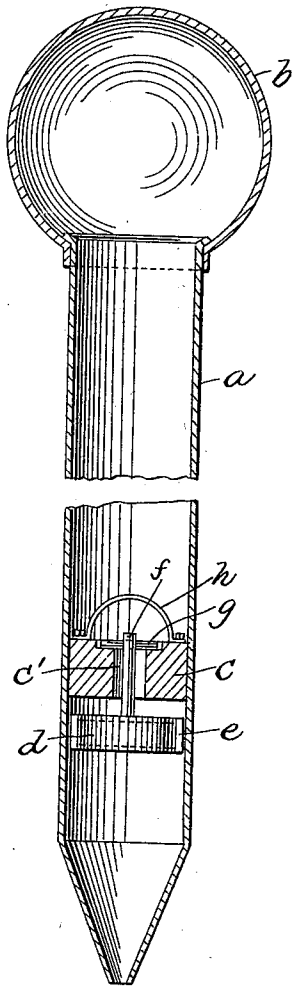



Fig. 6.

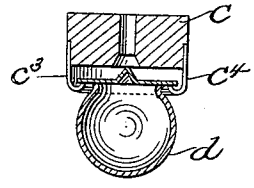



Fig. 4.

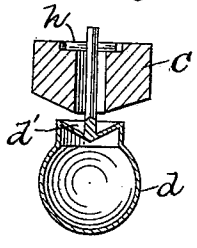



Fig. 7.

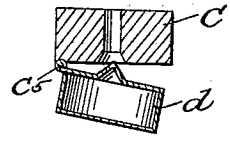



Fig. 5.

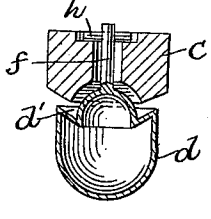
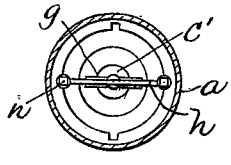



Fig. 2.




WITNESS

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# UNITED STATES PATENT OFFICE.

PAUL WEISSGERBER, OF LAUTERBACH, GERMANY.

## PIPETTE.

SPECIFICATION forming part of Letters Patent No. 620,066, dated February 21, 1899.

Application filed August 25, 1898. Serial No. 689,476. (No model.)

*To all whom it may concern:*

Be it known that I, PAUL WEISSGERBER, a subject of the Grand Duke of Hesse, residing at Lauterbach, in the Grand Duchy of Hesse, in the German Empire, have invented certain new and useful Improvements in Pipettes, (for which I have applied for patents in Belgium, dated July 14, 1898; in France, dated June 24, 1898; in Germany, dated January 21, 1898, and in England, dated July 1, 1898,) of which the following is a specification.

This invention relates to a pipette which by reason of its special construction is applicable not only for the ordinary purposes of a pipette in the laboratory, for example, but also as an instrument for oiling machinery, cycles, and so forth.

The special feature of the improvement is that the pipette is furnished with a device which enables it to draw in a definite quantity of liquid, which can be used for laboratory purposes, or of oil, which can be used for the lubrication of the working parts of machinery, the quantities drawn in being easily controlled by the said device.

In the accompanying sheet of drawings, Figure 1 is a vertical section of a pipette constructed in accordance with the invention. Fig. 2 is a plan of same, and Figs. 3 to 7 show modifications of the float-valve used in the pipette.

The pipette *a*, (shown in Figs. 1 and 2,) and which may be made either of transparent or opaque material, is provided, as usual, with an india-rubber collapsible ball *b*, which serves for effecting the filling and emptying of the pipette. In the interior of the cylindrical part of the pipette is a part *c*, having a hole through its center constituting a valve-seat, and with which valve-seat *c* is connected a float. This float consists of a lower piston-shaped part *d*, guided by suitable guide-pieces *e*, and of a valve-spindle *f*, passing through the central opening *c'* of the valve-seat *c*, care being taken that this valve-spindle *f* is smaller in diameter than the opening *c'* through the valve-seat in order that an annular passage may be left around the spindle. Through the upper part of the valve-spindle is passed a stop-pin *g*, which rests on a turned annular surface on the upper part of the valve-seat *c*. When the india-rubber ball *b* is pressed, the air is driven out through the opening *c'* in the valve-seat and the float *d* is pressed downward. Then when the ball *b* is relaxed after the point of the pipette has been immersed in liquid the latter enters the pipette and lifts the float *d*, closing the opening *c'* in the valve-seat *c*, whereby the further entrance of liquid into the pipette is prevented. In order to empty the pipette, it is only necessary to squeeze the ball *b*, as usual, whereby the air in upper part of the pipette is compressed and presses out the liquid collected in the lower part of the pipette below the valve-seat *c*. It will be seen that by these means a definite quantity of liquid can be drawn in and delivered. If it is required to draw in a different quantity of liquid, it is only necessary to alter the position of the valve-seat *c* upward or downward. In order to effect this, the said valve-seat is simply furnished at its upper part with a semicircular bow or staple *h*, by means of which it can be drawn upward or pushed downward in the cylinder *a* by a suitable device, such as a wire, provided at its lower end with a hook, for example, introduced into the upper opening of the pipette. The space for receiving the liquid at the lower end of the pipette can thus be reduced or enlarged at pleasure; but in some cases the valve-seat *c* may be fixed once for all.

Besides the arrangement shown in Figs. 1 and 2 the modifications shown in Figs. 3 to 7 may be employed.

Fig. 3, for example, shows a modification in which the valve-spindle *f*, as also the opening *c'* in the valve-seat, is of conical shape, whereby when the float *d* rises a more secure closing of the opening is effected.

In the modification shown in Fig. 4 the liquid-tight closing of the valve is effected by a downwardly-directed conical surface *d'* at the upper part of the float *d*, which comes to bear against corresponding surface of the valve-seat *c*.

In the modification shown in Fig. 5 the annular surface *d* of the float-valve consists partly of a straight and partly of a round portion.

In the arrangement shown in Fig. 6 the float-valve is supported by the hooks $c^3$ and $c^4$, whereby a suitable guidance of the float is afforded.

In the arrangement shown in Fig. 7 the float $d$ is hinged at $c^5$ to the lower part of the valve-seat $c$ or is connected thereto by means of any suitable flexible connection, so that the float can rise and fall like a flap-valve, according as the pressure is exerted from below or from above.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a pipette having a suction and delivery ball, the combination of a valve-seat arranged within the cylindrical part of the pipette and provided with an opening and a float-valve $d$, substantially as described.

2. In combination in a pipette a valve-seat which is adjustable within the said pipette to vary the capacity, and a float-valve on the under side thereof, substantially as set forth.

3. In combination in a pipette, a valve-seat within the tubular portion thereof, a float-valve seated thereunder and closing upward, and means for producing suction or pressure above the said valve-seat, substantially as set forth.

4. In combination in a pipette, an adjustable valve-seat and float-valve opening downward, and means for limiting the downward movement of the valve, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

PAUL WEISSGERBER.

Witnesses:
JEAN GRUND,
FRANK H. MASON.