No. 646,383. Patented Mar. 27, 1900.

W. I. FERRIS.

FOUNTAIN PEN.

(Application filed Feb. 23, 1897.)

(No Model.)

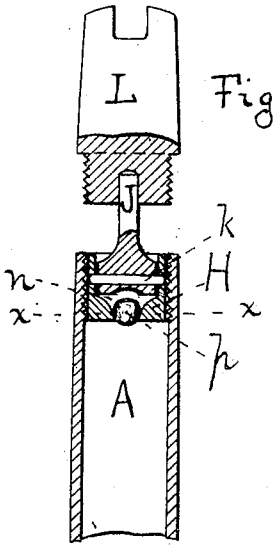


Fig. 1.

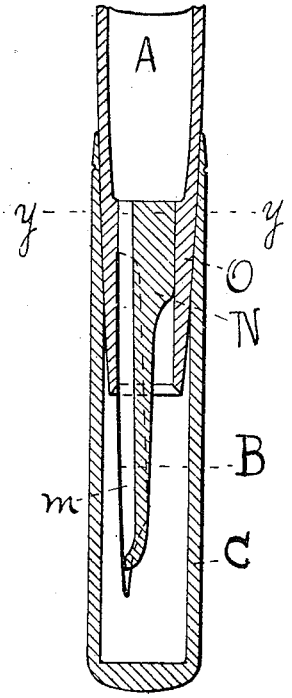


Fig. 2.

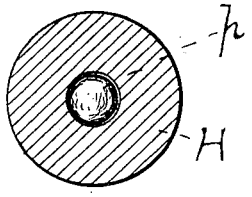
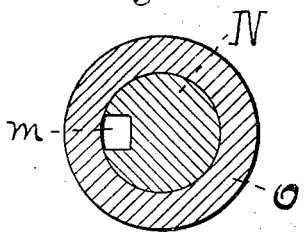


Fig. 3.



WITNESSES

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FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 646,383, dated March 27, 1900.

Application filed February 23, 1897. Serial No. 624,705. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM I. FERRIS, a citizen of the United States, and a resident of the city of Stamford, county of Fairfield, and State of Connecticut, have invented a certain new and useful Improvement in Fountain-Pens, of which the following, taken in connection with the accompanying drawings, is a description.

My invention relates to means for filling fountain-pens constructed to contain a reservoir of ink within the penholder, and has for its object greater convenience, cleanliness, and economy. It is in scope an improvement upon the device shown in my application, Serial No. 616,901, filed December 24, 1896; and it consists, substantially, of the combination of a piston with valve situated within the penholder, a tightly-fitting removable cap for the upper end of the penholder, and a relatively-contracted opening at the lower end where the ink ascends in pumping. It leaves out entirely the stationary partition and valve of the prior device.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of the entire device. Fig. 2 is an enlarged horizontal sectional view on the line x x of Fig. 1. Fig. 3 is an enlarged horizontal sectional view on the line y y of Fig. 1.

A is the ink-reservoir within the penholder, B the pen, and C the ordinary cap to cover the pen-point.

H is a piston fitting loosely within the penholder, having a conical hole n, into which a ball p (ordinary No. 8 shot will do) fits. The hole n and ball p constitute a simple valve. The piston is operated by a handle J, attached to the piston by a pivot K and attached at the other end to a cap L, which screws into or otherwise tightly fits the upper end of the penholder. The cap L is thus not only a cap to close the penholder when full, but is also a part of the piston-rod.

An essential feature of the device is that the opening at the lower end—that is, the opening through which the ink is pumped—should be somewhat contracted in relation to the diameter of the piston in the reservoir. This may be accomplished, as readily seen, in many ways, such as contracting the lower end of the reservoir or partly filling it with the pen, feed-bar, or other pieces. The device shown in the drawings is one where the feed-bar N entirely fills the lower end of the penholder O, except for the feed-channel M. If there is more than one opening from the reservoir at the lower end, the sum of such openings must be less than the circular section of the reservoir. A piston and valve in a tube whose lower opening into the ink when immersed is of the same size as or larger than the horizontal section of the reservoir will not raise the ink at all.

The operation is as follows: When the penholder is empty, the cap L is unscrewed, the lower end of the pen B and feed-bar N dipped into the ink-bottle, and the piston H worked up and down with a number of short quick strokes until the ink appears above the piston H, when the cap L is again screwed on.

The differences in construction between the device of my prior application and this are that the former has an additional partition and valve (entirely dispensed with in this) and that the former need not have the lower opening contracted, while this one must. In the operation of filling the penholder the contraction of the lower opening takes the place in part of the stationary partition; but in the use of the pen in writing their functions differ. If the stationary partition, with its valve, were placed at the lower end, the pen would not be practical, for no ink going above the stationary partition would be drawn down in writing; but in this application it is left free to flow down. One is a positive stop both in pumping and in writing, and the other a relative stop, which is practically efficient in pumping and is no hindrance in writing. The advantages of this later device are its economy in cost of manufacture, the increase in capacity, since all the space above the stationary partition is utilized in this device as a part of the reservoir, and ease in cleaning, since on removal of the piston the ink runs out freely in this device, but has to be forced out in the other.

I claim as my invention—

1. In a fountain-pen, the combination of a hollow penholder, open from end to end, having a contracted feed-passage at the lower end; a piston operative solely in the upper part thereof; and a single self-closing valve

connected with such piston, such valve being opened on the downward movement to allow the passage of air above it.

2. In a fountain-pen, the combination of a hollow penholder, open from end to end, having a contracted feed-passage at the lower end; a piston operative solely in the upper part thereof, and attached to a piston-rod; a single self-closing valve connected with such piston, such valve being opened on the downward movement to allow the passage of air above it; and a cap attached to the piston-rod and closing the upper end of the reservoir when writing.

In witness whereof I have set my hand this 18th day of February, 1897.

WILLIAM I. FERRIS.

Witnesses:
SALTER STORRS CLARK,
ISAAC SARGENT.