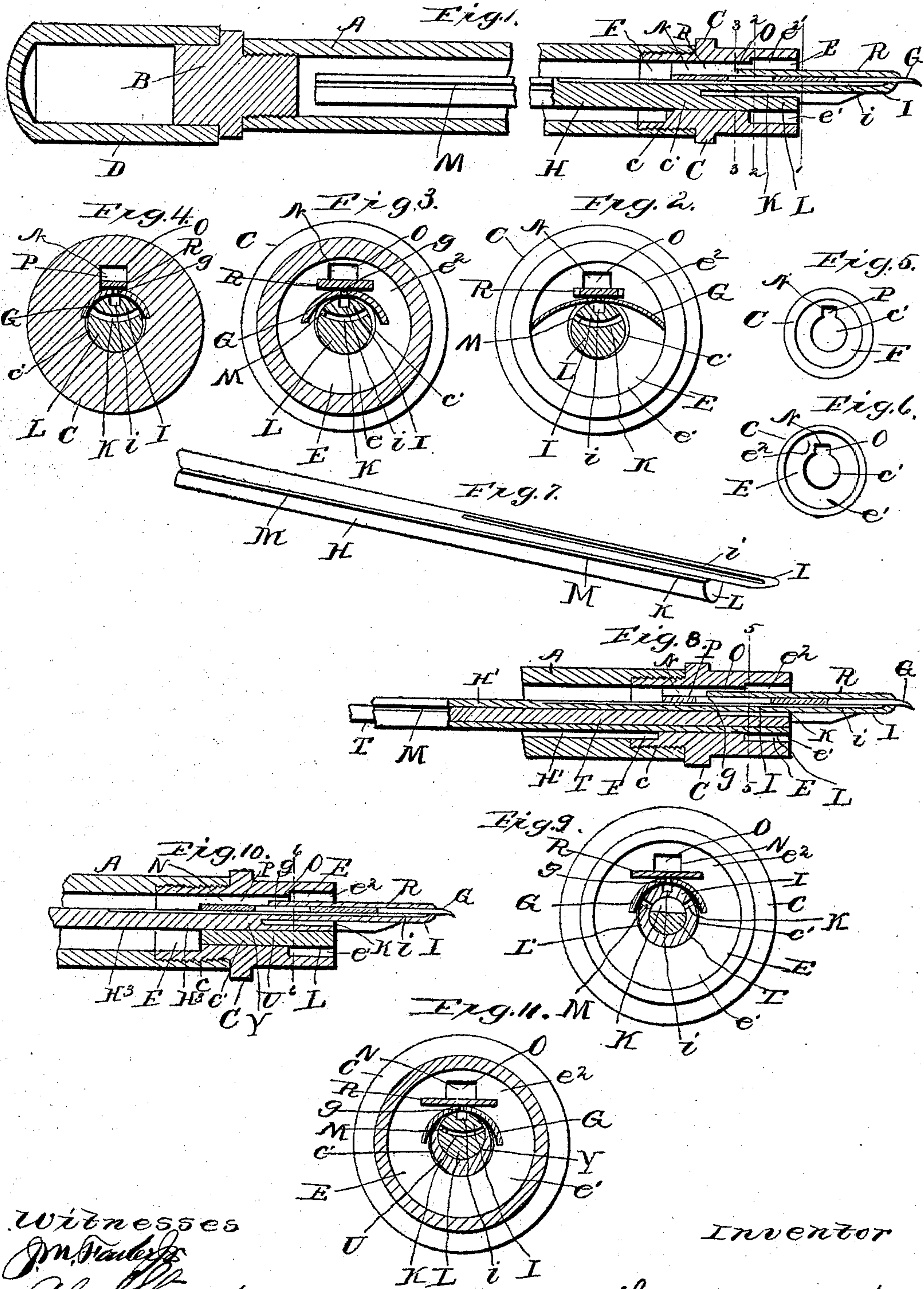


(No Model.)

L. B. WOOLFOLK.
FOUNTAIN PEN.

No. 495,647.

Patented Apr. 18, 1893.



Witnesses
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LUCIEN B. WOOLFOLK, OF ORANGE, NEW JERSEY.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 495,647, dated April 18, 1893.

Application filed November 26, 1892. Serial No. 453,260. (No model.)

To all whom it may concern:

Be it known that I, LUCIEN B. WOOLFOLK, a citizen of the United States, and a resident of Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fountain - Pens, of which the following is a specification.

This invention belongs to that class of fountain pens in which the ink-holder consists of a barrel closed at the upper end, and a tubular point section joined to the lower end of the barrel in any suitable manner; and in which the pen is held against the top side of the bore of the point section by pressure upon the under side thereof.

It is my desire to make a fountain pen that is simple in construction and cheaply made—that will not “leak”—may be easily cleaned—and not liable to get out of repair. The construction by which these aims are sought to be accomplished is hereinafter set forth in this specification, and is represented in the accompanying drawings.

The accompanying drawings are on an enlarged scale, the better to represent my invention.

Similar parts are designated by similar letters.

Figures 1 to 7 inclusive represent the preferred form of my invention. Fig. 1 is a longitudinal section of a fountain pen representing my invention. Fig. 2 is a cross section of same through the line 1, 1, of Fig. 1, looking from the point of the pen. Fig. 3 is a cross section of same through the line 2, 2, of Fig. 1, looking from the point of the pen. Fig. 4 is a cross section of the same through the line 3, 3, of Fig. 1, looking toward the point of the pen. Fig. 5 is a rear elevation of the point section. Fig. 6 is a front elevation of the point section. Fig. 7 is a perspective view of the feed-rod, feed-tongue and finger. Figs. 8 and 9 represent another modification of my invention. Fig. 8 is a longitudinal section of the lower part of a fountain pen embodying my invention. Fig. 9 is a cross section of the same through the line 5, 5, of Fig. 8, looking from the point of the pen. Figs. 10 and 11 represent another modification embodying my invention. Fig. 10 is a longitudinal section of the lower part of a fountain pen embodying my invention. Fig. 11 is a cross section

of the same through the line 6, 6, of Fig. 10, looking from the point of the pen.

Referring especially to Figs. 1 to 7 inclusive, I will now describe the preferred form of my invention.

A designates the barrel of the ink-holder, closed at the upper end by the plug B; C the tubular point section, which has a screw threaded portion *c* on its upper end, which fits into a thread in the lower end of the barrel A. *c'* designates the bore of said point section, which is in my construction made very short, being only long enough to hold the pen.

D designates the ordinary protecting cap, which fits upon the point section or upon the upper end of the barrel.

The lower end of the point section C is reamed out to a larger diameter than the bore *c'*. This enlargement of the bore of the point section by reaming constitutes an outer chamber E. The bottom portion of the outer chamber E constitutes an ink cup *e'*, and the top portion thereof forms an antechamber *e''*, through which air passes to the barrel.

F designates an ink supply chamber in the upper end of the point section, which is formed by reaming out the upper end of the same to a larger diameter than the bore *c'*.

G designates the pen, which is preferably without a shank, and is provided with an ink aperture *g* in the heel thereof.

H designates a feed rod below the pen, fitting in the bore *c'* of the point section. The feed rod H is a solid rod, and is provided with an integral feed-tongue I which is a thin strip cut from and projecting from the top side of the lower end thereof. The feed-tongue I is separated by the slot K from the under side of the lower end of the feed rod. The separating slot K extends up within the bore *c'*, thereby lengthening the feed-tongue. The bottom side of the feed rod below the separating slot K is designated the finger L, which extends down to the lower end of the ink cup *e'*. The feed rod is enlarged inside and fills the bore *c'*. The separating slot K is nearer the top side of the feed rod, so that the finger L is considerably larger than the feed-tongue I. In the top side of the feed rod H and the feed-tongue I is provided a groove forming the ink conduit *z*, for conveying ink to the

point of the pen. Another groove, which is in the side of the feed rod H forms the ink passage M, communicating between the ink-holder and the space below the feed-tongue I.

5 An ink and air groove N, is cut in the upper wall of the bore of the point section. The lower end of the groove N constitutes the air inlet O. The upper portion of the groove constitutes the ink way P, and air passes 10 through it on the top side thereof into the barrel. The pen G fits against the top side of the bore c' directly beneath the groove N, and its heel extends within the screw threaded portion of the point section. The pen is 15 held in position by the pressure of the feed rod H and the feed-tongue I against the under side thereof. In the groove N is held a strip R formed of hard rubber or of metal, extending down adjacent to the back of the 20 pen, which is designated the ink-conveyer. This ink conveyer may be dispensed with whenever it is preferred to do so, and its absence will not prevent the fountain pen from working efficiently.

25 In operation according to this construction, ink flows to the point of the pen through three lines of flow:—(first,) through the ink conduit i ; (second,) through the ink passage M down into the separating slot K, and thence around 30 the feed-tongue I to the ink conduit i ; and (third,) through the ink way P back of the pen down to the ink aperture g in the pen, and on through the ink conduit i to the point of the pen. And when the ink conveyer R is 35 used, ink also flows from the ink way P out between the ink conveyer R and the back of the pen. Overflows of ink pass through the ink passage M, and through the ink way P and the ink aperture g into the ink cup e' , 40 and are held therein until gradually fed to the pen. Air enters the barrel A through the antechamber e^2 and the air inlet O, and on through the groove N.

My pen is comparatively simple in construction, and can be cheaply made.

Allowing the air to enter back of the pen on top of the ink flow prevents the air and ink from interfering with each other.

In case of overflows, ink will pass readily 50 into the ink cup e' , as before described.

The finger L (which extends to the lower end of the ink cup e') and the feed-tongue I partially fill up the ink cup, so that the cup holds ink therein by capillary cohesion; otherwise the cup might not hold ink without 55 dropping it.

● The ink aperture g in the pen serves important offices in my construction, and presents several advantages:—(first,) it is part 60 of a regular passage for the ink to flow to the point of the pen; (second,) it allows ink to be drained away out of the groove N, and air to readily enter the barrel when needed to supply the vacuum therein; (third,) it allows the 65 passage of overflows of ink to the ink cup e' .

A most important feature is the shortness of the bore c' in the point section, which is

only long enough to support the pen. Fountain pens which have a small bore in the point sections have three faults: (first,) ink 70 does not flow readily through a small bore in a point section, especially when the bore is long; (second,) air does not flow readily through a long small bore; and (third,) a small bore has little capacity in the lower 75 end to hold overflows of ink. These defects are designed to be remedied by my construction. (First,) the small bore c' of the point section is only of sufficient length to hold the pen. The ink supply chamber F in the up- 80 per end of the point section being of larger diameter allows a free flow of ink to the pen. (Second,) the larger diameter of the outer chamber E affords ample stoppage for overflows of ink in the ink cup e' , and the ante- 85 chamber e^2 being enlarged allows a ready flow of air to the air inlet O.

Another feature of my construction one which is believed to be of great advantage is that the shortness of the point section C brings 90 the bore c' with its small diameter and thick walls within the screw thread c on the upper end of the point section, thereby greatly strengthening the screw thread, which is an important point. Moreover, owing to the 95 shortness of the point section, the heel of the pen extends up within the screw thread c and to the ink supply chamber, the lower end of which is within the screw thread c . By this construction the line of ink flow through the 100 small bore c' of the point section is made very short, thereby securing a steady flow of ink through it toward the point of the pen.

Another feature is that the ink conveyer R both conducts ink to the point of the pen and 105 also gathers upon the back of the pen ink brought by the feed-tongue I, thereby securing the regular flow of ink from the pen and preventing "skipping."

There may be various modifications of the 110 details of the construction without departing from the principle of my invention.

The modification represented in Figs. 8 and 9 differs from the preferred form in only a few points. The feed rod H' is a tube, and 115 in the longitudinal hole therein is held the long stopper plug T. The groove forming the ink passage M cuts into the separating slot K as in the preferred form; and the top side of the lower end of the stopper plug T is cut 120 away so as to form the equivalent of the interior portion of the separating slot K. The stopper plug T placed within the tubular feed rod H', and having the top side of the lower end thereof cut away as aforesaid, makes the 125 tubular feed rod just the equivalent of a solid feed rod, as in the preferred form. In other respects this modification does not differ from the preferred form. Ink flows to the pen through the ink conduit i ; and also through 130 the ink way P; the ink aperture g , and through the ink passage M, and on through the ink conduit i ; and ink also flows between the ink conveyer R and the pen. Air enters

through the antechamber e^2 and the air inlet O, and passes through the groove N into the barrel A.

The modification represented in Figs. 10 and 11 differs in some points from the preferred form. The bore c' in the point section is about the same size as in the preferred form; but, instead of having the feed rod so large as to fill up the bore of the point section, the following construction is adopted: A stopper U fits into the bore c' of the point section, extending down to the lower end of the outer chamber E. In the upper side of this stopper a subchamber Y is provided, in which fits the feed rod H^3 having the feed-tongue I formed upon the top side of the lower end thereof by the separating slot K, which separates the feed-tongue I from the finger L, integral with the bottom side of the feed rod. This modification differs from the preferred form only in the feed rod H^3 being held in the stopper U, instead of being enlarged and held directly in the bore c' of the point section. Ink flows to the pen and air enters the barrel in a similar manner to the preferred form; and overflows of ink pass to the ink cup e' in a similar manner.

I have had issued to me patents for improvements in fountain pens, No. 457,490, issued August 11, 1891, and Nos. 480,800, and 481,090, both issued August 16, 1892. I have also pending three applications for patents for improvements in fountain pens, Serial No. 449,197, filed October 18, 1892, Serial No. 462,834, filed February 18, 1893, Serial No. 463,718, filed February 25, 1893, on which patents have not yet been issued. But none of the foregoing have the peculiar features of my present invention,—the pen fitting against the top side of the bore c' of the point section; nor the groove N provided in the wall of the bore back of the pen; nor the feed rod held in the bore of the point section and holding the pen firmly in position by pressure upon the bottom side thereof; nor the feed rod having the finger L considerably larger than the feed-tongue I; nor have any of them the ink supply chamber extending down within the screw threaded portion of the upper end of the point section leaving the small bore c' of the point section to extend up within the screw thread strengthening it with its thick walls.

I do not wish to claim anything set forth in the foregoing, but only those features which are new and peculiar to my present invention.

What I claim as new is—

1. In a fountain pen, a point-section having a tubular passage or bore, its upper and lower ends reamed out, a screw thread on the periphery of its upper end, and a groove cut in the upper wall of the bore and extending from the reamed out portion of the lower end to the reamed out portion of the upper end, substantially as described.

2. In a fountain pen, the combination with a barrel, of a tubular point-section joined to the lower end of the barrel provided with a

groove in the upper wall of the bore thereof, a pen held in the bore of the point section directly beneath the groove, a feed-rod held in the bore beneath the pen provided with a feed-tongue integral with the top side of the lower end thereof, the feed rod and feed-tongue holding the pen in position by bearing against the under side thereof, substantially as described.

3. In a fountain pen, the combination with a barrel closed at the upper end, of a tubular point-section joined to the lower end of the barrel, and provided with a groove in the upper wall of the bore for the passage of ink and the admission of air, a pen held against the top side of the bore directly beneath the groove, and passages whereby ink may flow out of the barrel to the point of the pen, and air may enter the barrel, substantially as described.

4. In a fountain pen, the combination with a barrel closed at the upper end, of a tubular point-section joined to the lower end of the barrel provided with a groove in the upper wall of the bore of the point section for the passage of ink and the admission of air, a pen held against the top side of the bore directly beneath the groove, and provided with an ink aperture in the heel thereof, and additional ducts or passages whereby ink may flow out of the barrel to the point of the pen, and air may enter the barrel.

5. In a fountain pen, the combination with a barrel closed at the upper end, of a point-section joined to the lower end of the barrel provided with a bore therein, a groove in the upper wall of the bore, a pen held against the top side of the bore directly beneath the groove, and an ink conveyer held in said groove and extending down back of the pen, substantially as described.

6. In a fountain pen, the combination with a barrel closed at the upper end, of a point-section joined to the lower end of the barrel provided with a bore therein, a groove in the top side of the bore, a pen held against the top side of the bore directly beneath the groove and provided with an ink-aperture in the heel thereof, a feed-tongue below the pen, and ducts and passages whereby air may enter the barrel, and ink may flow out of the barrel to the point of the pen.

7. In a fountain pen, the combination with a barrel closed at the upper end, of a point-section joined to the lower end of the barrel provided with a bore therein, and reamed out in its lower end to a larger diameter than the bore, and having a groove in the top wall of the bore for the passage of ink and the admission of air, a pen held in the bore directly beneath the groove, a feed-tongue below the pen, and ducts and passages whereby air may enter the barrel, and ink may flow out of the barrel to the point of the pen.

8. In a fountain pen, the combination with a barrel closed at the upper end, of a point-section joined to the lower end of the barrel

having a tubular passage or bore, a screw thread on the periphery of its upper end, and a groove in the top wall of the bore for the passage of ink and the admission of air, a pen
5 held in the bore directly beneath the groove, the heel of which extends up within the screw threaded portion of the point section, a feed-tongue below the pen, and additional ducts and passages whereby air may enter the barrel, and ink may flow out of the barrel to the
10 point of the pen.

9. In a fountain pen, a feed-rod having a thin strip severed from its upper side and projecting from its lower end to form a feed-tongue, a finger underneath and shorter than
15 said feed-tongue, and a slot cut in the upper side of the lower end of said feed rod to separate the finger and feed-tongue, all substantially as described.

10. In a fountain pen, a feed rod having a
20 thin strip severed from its upper side and projecting from its lower end to form a feed-tongue, a finger underneath and shorter than said feed-tongue, a slot cut in the upper side
25 of the lower end of said feed rod to separate the finger and feed tongue, an ink conduit on the top side of the feed rod and feed tongue, and an ink passage in the feed rod extending
30 down to and communicating with the slot between the feed-tongue and finger, substantially as described.

Signed at New York, in the county of New York and State of New York, this 22d day of November, A. D. 1892.

LUCIEN B. WOOLFOLK.

Witnesses:

JOSEPH P. MULLIN,
LILLIE HANNA.