

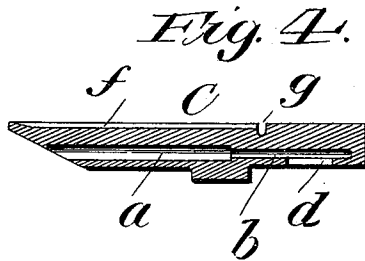
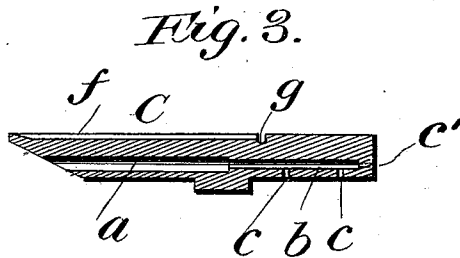
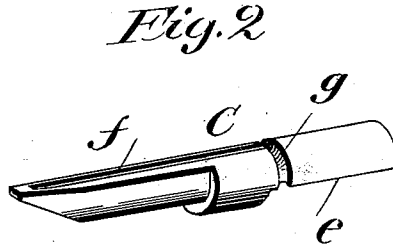
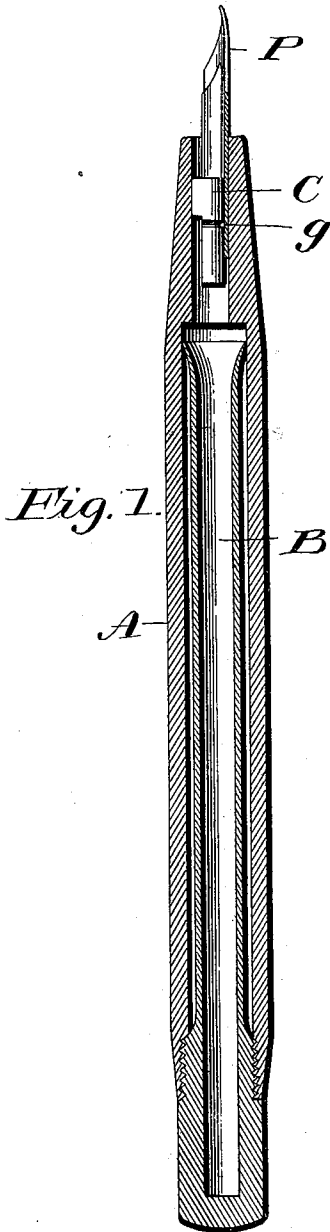
No. 634,398.

Patented Oct. 3, 1899.

D. C. DEMAREST.  
FOUNTAIN PEN.

(Application filed Aug. 4, 1899.)

(No Model.)



Witnesses:  
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his Attorney

# UNITED STATES PATENT OFFICE.

DEWITT C. DEMAREST, OF PASSAIC, NEW JERSEY, ASSIGNOR TO THE  
EAGLE PENCIL COMPANY, OF NEW YORK.

## FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 634,398, dated October 3, 1899.

Application filed August 4, 1899. Serial No. 726,152. (No model.)

*To all whom it may concern:*

Be it known that I, DEWITT C. DEMAREST, of Passaic, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Fountain-Pens, of which the following is a specification.

My invention relates to the feed portion of a fountain-pen, the object being to obtain regular and uniform ink-supply. This object is attained by a novel construction of the air-passage or passage through which air is permitted to have access to the interior of the ink-reservoir to take the place of the ink drawn therefrom for writing purposes. The arrangement is such that the air will enter readily, but not too readily, in small quantity at a time and without liability to stick and accumulate in the feeder in the shape of large bubbles, which so long as they do stick interfere materially with the ink-feed and which, on the other hand, when they finally do pass back or up into the reservoir displace too much ink and cause it to flow too freely. It is my aim to do away with this annoying irregularity and to insure an even, uniform, and moderate feed; and this result I attain by means of the construction which I shall now proceed to describe in detail by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal axial section of the complete pen. Fig. 2 is an enlarged view of the feed bar or plug detached. Fig. 3 is a longitudinal central section of the same.

Fig. 4 is a like section of a modification.

A is the barrel or handle.

B is the ink-reservoir, which is inserted into the barrel from the rear end of the latter.

C is the feed bar or plug, which fits in and closes the front end of the handle in the usual way, the pen P being inserted and held between the plug and the barrel and taking its ink from the reservoir by capillary action in the usual way.

The air-passage in the plug or bar C is distinct and separate from the passage or passages through which ink flows to the pen. This air-passage consists of a duct formed in and lengthwise of the plug and of different diameters. The part *a*, of larger diameter, is in front and opens to the external atmosphere.

The part *b*, which is the rearward continuation of *a*, is of smaller diameter than the latter—a capillary tube, in fact—and communicates with the interior of the reservoir through a plurality of holes *c*. There must be at least two of these holes, and this is the number shown in the drawings. More may be added, if desired; but while they may do no harm they will do no particular good. It is essential also that these two holes should be still smaller in diameter than the passage *b*, with which they communicate, and that they should be a certain distance from one another—say not less than three-sixteenths of an inch or thereabout.

While the dimensions of the parts may slightly vary, I have found that, say, for a No. 4 pen—a medium-sized pen—the part *a* of the air-passage should be the gage of a No. 53 drill, the part *b* the gage of a No. 56 drill, and the holes *c* of a No. 57 drill. For a smaller pen the part *b* of the air-passage can be the gage of a No. 55 drill, the dimensions of the other parts of the air-passage remaining unchanged.

In lieu of and as an equivalent for the two holes *c* I can use a continuous slit or minute slot *d*, as seen in Fig. 4; but this slot should not be of a width exceeding the diameter of the holes *c*, nor should its length be less than the distance—three-sixteenths of an inch—which separates the holes *c* from each other. The holes *c* or their equivalent are shown as formed in the side of the plug at a point *e*, where the plug is cut away, so as to permit the reservoir-ink to pass down to the holes; but the rear hole can, if desired, be formed in the rear end of the plug, as indicated by dotted lines at *c'*, Fig. 3.

When the pen is in use, the air which enters the reservoir invariably passes out into the reservoir from the rear end of the two openings *c*, and it does this exactly in proportion to the consumption of the ink and without sticking or accumulating in the air-passage. The same is true also in the case of the slit *d*, for the air-exit there is at the heel or rear end of the slit. The function of the two openings or plurality of openings appears to be to permit such movement of the ink in the duct as may be consequent upon

the passage of the air therethrough to take place freely and without constraint.

The relatively-constricted size of the holes *c* I find to be a necessary thing. If they are not thus constricted, but are made of the same size as the passage *b*, with which they communicate, then those irregularities of feed appear which it is the object of my invention to prevent.

The pen can be supplied with ink in any suitable way so long as the ink-supply passage is distinct from the air-duct. In the present instance the pen is supplied with ink through a longitudinal groove *f*, formed in the surface of the plug next to the pen. This groove extends only part way the length of the plug, its rear end being covered by the heel of the pen, and at this rear end it communicates with a groove *g*, formed circumferentially in the plug and communicating with the ink-space provided by the cut-away portion *e* of the plug.

Having described my invention and the best way known to me of carrying the same into practical effect, what I claim herein as new, and desire to secure by Letters Patent, is—

In a fountain-pen, a feed bar or plug containing a longitudinal air-duct separate from and independent of the ink-supply duct, and consisting of the larger passage *a* opening at its front to the external air, and at rear into a smaller passage *b*, which in turn communicates through a plurality of still smaller holes *c*, or their stated equivalent, with the ink-reservoir—these parts forming the said ink-duct having the dimensions and being proportioned and arranged relatively to one another as hereinbefore shown and set forth.

In testimony whereof I have hereunto set my hand this 1st day of August, 1899.

DEWITT C. DEMAREST.

Witnesses:

C. S. BRAISTED,  
SAMUEL KRAUS.