W. I. FERRIS.

FOUNTAIN PEN.

APPLICATION FILED JUNE 3, 1914.

1,201,951. Patented Oct. 17, 1916.

Fig. 1.

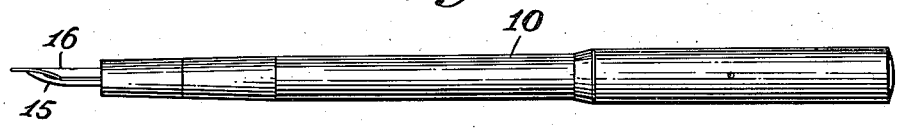


Fig. 4.

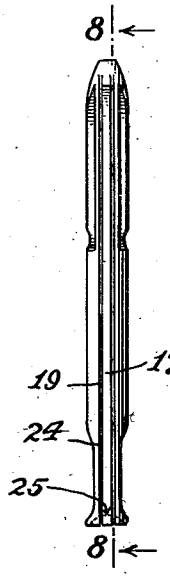


Fig. 5.

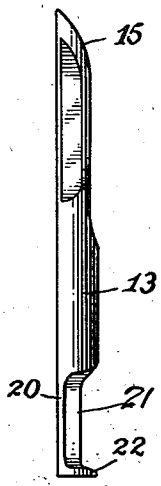


Fig. 6.

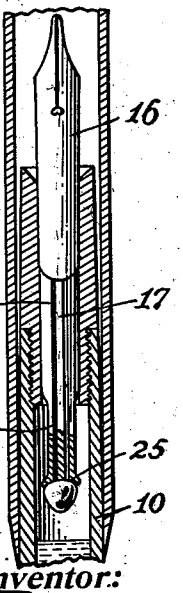


Fig. 3.

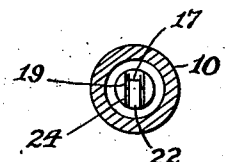
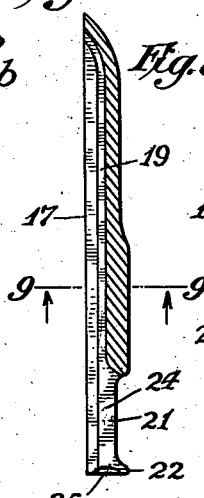


Fig. 2.

Fig. 7.

Fig. 8.



Attest:

Irving E. Jennings.

Walter Randall

Inventor:

by William I. Ferris

UNITED STATES PATENT OFFICE.

WILLIAM I. FERRIS, OF WESTFIELD, NEW JERSEY, ASSIGNOR TO L. E. WATERMAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FOUNTAIN-PEN.

1,201,951. Specification of Letters Patent. Patented Oct. 17, 1916.

Application filed June 3, 1914. Serial No. 842,558.

To all whom it may concern:

Be it known that I, WILLIAM I. FERRIS, a citizen of the United States, residing at Westfield, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Fountain-Pens.

This invention relates to improvements in fountain pens having for its object the free and continuous flow of ink from the reservoir along the feed bar to the metallic pen.

By means of my invention, the passage of ink along the feed bar is continuous, there being no noticeable diminution of the supply when a bubble of air passes from the pen point into the reservoir. The reasons for this are: first, that the capillary fissures in the feed bar give a constant limited supply of ink; and second, by the improved construction of the feed bar, the ink in passing into the bar accelerates the air bubble, especially when it reaches the end of the bar, so that the air bubble passes through the feed bar rapidly and leaves the feed bar without hesitation or clinging to the same.

My invention consists of a feed bar having its inner end constructed so that the ink can all be taken from the reservoir to the last drop, and that air bubbles passing upward through the bar are given an impetus, thus causing them to clear the end of the feed bar and allow the ink to flow to the metallic pen without interruption.

By my invention, when the pen is not in a writing position, the surplus ink is withdrawn from that portion of the feed bar which comes in contact with the metallic pen, thereby avoiding the possibility of sweating or spilling ink within the cap. While the surplus ink is so withdrawn and falls into the main supply of ink within the reservoir, nevertheless, the recessed portion of the feed bar within the barrel of the pen retains a sufficient amount of ink to form a secondary ink supply available to keep the capillary plates and fissures of the feed bar moist when the pen is inverted and not in use. The result is that when the pen is brought into a writing position, even after a considerable period of disuse, the ink is fed immediately through the already moist feed bar, and the metallic pen writes instantly when touched to paper. This is accomplished by the arrangement of the capillary surfaces as shown in Fig. 8.

The old type of feed bar is so constructed that an air bubble will seat itself on the reservoir end of the feed bar, thereby closing the channel for the ink and the air bubble does not detach itself until displaced by a sharp movement of the pen or by a succeeding air bubble.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my improved fountain pen; Fig. 2 is a section of the lower end of a fountain pen made according to my invention, and Fig. 3 is a section on line 5—5 in Fig. 2; Fig. 4 is a top view and Fig. 5 a side view of a feed bar used in my improved fountain pen; Fig. 6 is a section on line 8—8 in Fig. 4; Fig. 7 is a cross section on line 9—9 in Fig. 6; Fig. 8 is a section in line with the metallic pen in Fig. 2, the pen being shown in elevation.

In this specification, the pen point, which is usually made of metal, although it may be made of other material, will be called the metallic pen to differentiate it from the entire structure which is called a pen.

The pen is made of any suitable material and comprises a barrel 10 forming a reservoir having a nozzle portion which is preferably made in the form of a nozzle 11 which screws into the barrel or reservoir and its inner face 12 forms the bottom of the reservoir. The feed bar 13 fits in the perforation 14 of the barrel, the lower end 15 of the bar being under the metallic pen 16 which is secured in the nozzle, usually by friction. The top of the feed bar has a groove 17 which extends the length of the same, the groove acting as a channel for the ink passing down and for the air bubbles 18 which pass up from the metallic pen to the reservoir. The feed bar is also provided with fissures 19, these fissures being disposed in any convenient manner, preferably, however, on each side of the groove 17 and having a greater depth than the groove. These fissures, by their capillary action, make the passage of ink positive and are not clogged by the air. The feed bar extends within the reservoir, the extension 20 having a cut-away portion 21 at the bottom at the back end of the feed bar. This forms an overhang 22 which, with the wall of the reservoir, forms a secondary reservoir or chamber 23. The reservoir end of this feed bar is slightly concave at 25. The fissures 19 are cut through the bar in the back part of the

bar to form ducts or fissures 24 which are in communication with the secondary reservoir 23.

In the old type of feed bar, an air bubble will cling to the inner end of the groove or channel 17, resisting displacement unless the pen is shaken or it is succeeded by another air bubble and thus blocking the entrance of ink into the feed bar.

In my improved pen, the bubble, when it passes above the secondary reservoir 23, passes directly from the end of the feed bar as at *b* in Fig. 2. The ink in the supplemental reservoir 23 passes through the comparatively shallow fissures or ducts 24 and coming up into the channel 17 gives an impetus to the bubble and it passes from the inner end of the feed bar quickly and does not cause any appreciable cessation of flow of the ink. The introduction of ink in the rear of the bubble takes place in the feed bar and within the reservoir, the ink in the secondary reservoir being directed mainly behind the bubble on account of the tendency of the overhang 22 to resist the expenditure of the pressure of the ink back into the reservoir 10.

Having now described my invention, what I claim is—

1. A feed bar for fountain pens having a groove in its top face and having fissures extending along its top edge, the fissures being deepened to extend through the bar at the rear portion thereof, the bar being cut away near the rear to decrease the depth of the fissures and provide a downwardly projecting overhang.

2. In a fountain pen, a feed bar having a groove at the top thereof to form a channel for both air and ink, said channel extending to the rear end of the feed bar, the feed bar having its under side cut away near the back end thereof to produce a concave surface with a rear overhang, the feed bar having capillary fissures extending from the groove to the bottom of the bar at the cut away portion.

3. A feed bar for fountain pens having a groove on its top surface, the groove providing a channel for ink and air, the groove extending to the back end of the bar, the bar being cut away at the bottom near its back end to form an overhang at the back, the bar having capillary fissures in communication with the groove, said fissures extending to the bottom of the bar at the back end of the bar, the fissures thereby forming ducts for the passage of ink, said ducts being reduced in depth at the cut away portion.

4. A feed bar for fountain pens having a groove in its top face and having fissures extending along its top edge, the fissures being deepened to extend through the bar at the rear portion thereof, the bar being cut away near the rear to decrease the depth of the fissures and provide a downwardly projecting overhang, the bar being cut away at the rear end to form a concave depression.

5. A feed bar for fountain pens having a groove on its top surface, the groove providing a channel for ink and air, the groove extending to the back end of the bar, the bar being cut away at the bottom near its back end to form an overhang at the back, the bar having capillary fissures in communication with the groove, said fissures extending to the bottom of the bar at the back end of the bar, the fissures thereby forming ducts for the passage of ink, said ducts being reduced in depth at the cut away portion, the bar being cut away at its inner extremity to form a concave chamber.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM I. FERRIS.

Witnesses:

WALTER RANDALL,

IRVING E. JENNINGS.