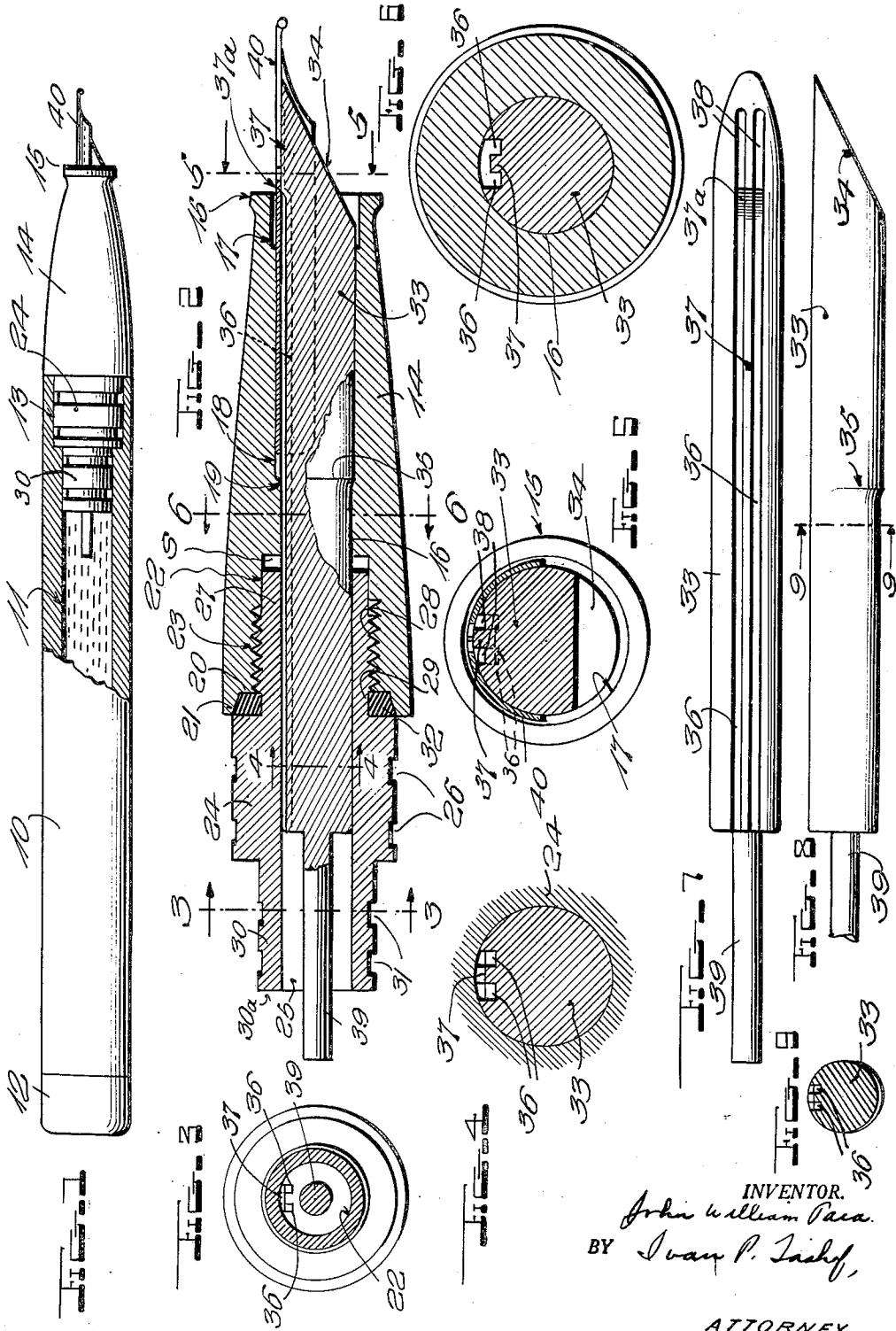


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FOUNTAIN PEN

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FOUNTAIN PEN

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This invention relates to a fountain pen and primarily to a pen having a readily replaceable point.

It is an object of the present invention to provide a fountain pen having a replaceable nib holding sleeve whereby substitution of a nib carrying a fine, coarse, or medium point, one for the other, may be readily made.

It is another object of the present invention to provide a leak-proof sealing means between the nib holding sleeve and the barrel of the pen.

It is an additional object of the present invention to provide a fountain pen which will provide uniform feed of the ink from the barrel to the pen nib and will keep the pen nib moist for instantaneous use.

Another object of the present invention is to provide a cylindrical feed bar for fountain pens having a reduced semi-cylindrical portion at one end adapted to receive a pen nib, said feed bar having a pair of primary longitudinal feed grooves extending from one end towards the other, a rib between said grooves, said rib being of lesser diameter than the feed bar itself, and capillary grooves formed as extensions of said primary feed grooves and extending towards the outer end of the feed bar, the juncture of said grooves with the capillary grooves being anterior to the split between the nib when the pen nib is in position in the pen nib-receiving space.

Another object of the present invention is to provide a feed bar having a rear extension rod projecting beyond the rear end of the rear extension member of the insert plug and into the ink present in the ink reservoir, said extension rod preventing an accumulation of air bubbles in the ink reservoir.

Another object of the present invention is to provide an insert plug having a forward extension member, the latter being adapted to be received in a counterbore of the sleeve-retaining member, the length of the forward extension member of the insert plug being less than the counterbore to leave a space between the rear end of the forward extension member of the insert plug and the end of the counterbore, the latter extending from adjacent the rear end of the sleeve-retaining member to thereby facilitate the free flow of ink through the fountain pen.

Still other objects, advantages, and improvements will be apparent from the following description, taken in connection with the accompanying drawings, in which:

Fig. 1 is a side elevation view, partly in section, of a fountain pen having the improved point holding sleeve;

Fig. 2 is a sectional view on an enlarged scale in section through the nib holding sleeve and the insert which secures same in the barrel of the pen;

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Fig. 3 is a transverse vertical section taken on the section line 3—3 of Fig. 2 showing in particular the dual ink feeding grooves;

Fig. 4 is a view similar to Fig. 3 taken on the section line 4—4 of Fig. 2 but on an enlarged scale;

Fig. 5 is a view on an enlarged scale through the nib and the feed bar, taken on the section line 5—5 of Fig. 2;

Fig. 6 is a view on an enlarged scale taken on the section line 6—6 of Fig. 2; and

Fig. 7 is a top plan view of the feed bar;

Fig. 8 is a side elevation thereof; and

Fig. 9 is a transverse vertical section taken on line 9—9 of Fig. 8.

Referring now to the drawings, and more particularly to Fig. 1, the fountain pen of the present invention comprises a cylindrical barrel 10 having a longitudinal bore 11 therethrough, said barrel having an ink reservoir therein. The upper end of the barrel is closed by a cap 12 which may be screw threaded or otherwise suitably fitted thereon. At the lower end of the barrel a counterbore 13 is formed for a purpose which will hereinafter be set forth.

A removable point holding sleeve 14 has its inner end of the same diameter as the barrel 10 and is tapered inwardly towards its outer end, terminating in a flange 15. The sleeve 14 has a central bore 16 therethrough, a first counterbore 17, extending from the outer end, and a second counterbore 18 formed concentrically with and as a continuation of the counterbore 17 but of reduced diameter, the counterbore 18 forming a shoulder 19 at approximately the mid diametral plane of the sleeve 14, where it merges into the main bore 16 through the sleeve. A third counterbore 20 extends from the outer end of the sleeve, the wall of this counterbore being chamfered to taper outwardly at 21. Similarly, a fourth counterbore 22 is formed concentrically with and as a continuation of the counterbore 20 but again of reduced diameter. The counterbore 22 is internally threaded at 23.

An insert plug 24 has a central bore 25 therethrough of approximately the same diameter as the central bore 16 through the point holding sleeve 14. The outer diameter of the main body portion of the insert plug 24 is approximately the same as the diameter of the counterbore 13 in the barrel 10, so that the plug will have a snug fit in the counterbore. The main body of the plug is provided with parallel annular grooves 26—26. The plug has a forward extension 27 provided with external threads 28 adapted to mate with the threads 23 in the wall of the counterbore 22 in the sleeve 14. A gasket receiving groove 29 is formed around the extension intermediate the main body portion and the threaded portion of the plug. The length of

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the threaded extension 27 is considerably less than the depth of the counterbore 22 in the sleeve 14 into which the extension fits in the assembled relationship, there being formed therebetween the space S. Similarly, the plug 24 has a rear extension 30 which likewise has parallel annular grooves 31—31 formed therein. The diameter of the extension 30 is approximately the same as that of the counterbore 13 in the barrel 10 into which the extension fits in assembled relationship.

The feed bar 33 which is shown in Figures 2, 7, 8, and 9 is of generally cylindrical shape and is provided with a slanted end 34 as shown in Figs. 1, 2 and 8. As shown in Fig. 8, the slanted portion 34 produces a pointed end which underlies the pen nib. The forward cylindrical section of the feed bar, from approximately the mid-section to the outer slanted end 34, is of greater diameter than the rear cylindrical section, thereby making the two sections eccentric to each other, as shown in Fig. 9. A shoulder 35 is thus formed at the juncture of the forward cylindrical section with the cylindrical rear portion. Two parallel primary feed grooves 36—36 are formed in the feed bar 33 extending longitudinally from the inner end toward the outer slanted end 34. These grooves are separated by a partition or rib 37, this rib being reduced in height, as by milling up to the point 37a, so as to form an over-all connecting feed duct. Anterior to the diametrical plane through the inner edge or intermediate the inner and outer edges of the slanted end 34 of the feed bar, the rib 37 merges into the main body of the feed bar, thereby terminating the over-all feed duct, and the feed grooves 36—36 merge by rounded bottoms into continuation capillary grooves 38—38, respectively. Further, when the feed bar 33 and nib 40 are assembled with the sleeve 14, the point 37a is approximately in the same diametrical plane as the end of the sleeve 14. The point 37a thus occurs at the point at which the nib 40 is free to move away from the feed under writing pressure. It has been found that the depth of the feed grooves 36—36 should desirably be approximately one and one-half times their width, that is, if these grooves are .010 inch wide, they should be .015 inch deep. It is desirable that the secondary capillary grooves have a depth of about one-half of that of the primary feed grooves. The capillary grooves 38—38 extend to approximately the edge of the slanted end 34 of the feed bar 33, as shown in Fig. 7, where they are terminated due to progressively decreasing depth. The width of the capillary grooves 38—38 is the same as that of the main feed grooves 36—36 and the depth of the grooves 38—38 is approximately one-half that of the feed grooves 36—36, that is, if the latter grooves are .015 inch deep, the capillary grooves should be approximately .0075 inch deep.

The foregoing relationship of the primary feed and capillary grooves is correct if the depth of the capillary and primary feed grooves is measured from the outside of the grooves. It will be noted, however, that if the depth of the feed grooves is measured from the divided bridge 37, they are identical both underneath the nib 40 and within the barrel proper. The difference, therefore, in the effective depth of the feed grooves is caused by the increase in height of the bridge 37, shown in Fig. 5, as compared to the height of the bridge 37, as shown in Fig. 6, this increase in height being considered in the relationship of the bridge 37 to the over-all di-

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ameter of the feed barrel. The height of the bridge 37 is lower where the bridge is contiguous with the grooves 36—36. The bridge 37 is higher where it is contiguous with the grooves 38—38. The bridge 37 is therefore higher at the front end starting from the point 37a. Stated differently, the capillary grooves over the slanted end 34 of the feed bar are of the same depth as the primary feed grooves 36—36 in the main body section of the feed bar 33, measured from the top of the rib or bridge 37.

As shown in the drawing, and particularly Fig. 5, the bridge or rib 37 is higher with regard to the bottom of the capillary grooves 38—38 under the nib than it is to the rear of the nib within the barrel, as shown in Fig. 6. In other words, until a pressure is placed upon the point or nib 40, relatively small unconnected channels for ink are provided under the nib. These channels may, therefore, be said to be shallow or capillary in action. When pressure is, however, placed upon the nib, the nib tends to move away from the raised portion of the bridge 37 and allows free flow of ink. In effect, therefore, during writing the capillary channels become increased in size and a continuous channel is then established from the ink supply in the barrel to the point. No comb grooves are therefore necessary and this feature not only results in increased smoothness of feed and write-ability, but also prevents leakage when the pen is not in use.

The feed bar 33 has a reduced cylindrical end member 39 extending beyond the end 30a of the rear extension member 30 of the inner plug 24. Preferably, the member 39 should extend beyond the end 30a, a distance equivalent to twice its diameter. The projection of the rod beyond the end 30a acts as a breaker for the ink and keeps the ink flowing steadily to the feed bar 33 regardless of the presence of air bubbles.

In assembly, the grooves 26—26 and 31—31 are filled with adhesive or cement, and the insert plug 24 is forced into the counterbore 13 of the barrel 10, the rear extension 30 entering the main bore 11 of the barrel. Different adhesives may be used in the grooves 26—26 and 31—31, according to the different functions to be performed, if desired. The feed bar 33 is next fitted in the central bore 25 of the insert plug, the longitudinal contact of the feed bar insuring a snug fit of the feed bar in this bore. The pen point 40 is placed around the lower end of the feed bar with the split between the nibs of the point properly centered with respect to the longitudinal rib 37 of the latter. The sleeve is then placed around the feed bar 33 and the point 40 and screwed home by the co-action of the threads 23 in the counterbore 22 of the sleeve with the threads 28 on the forward extension 27 of the insert plug 24. The central bore 16 in the sleeve 14 will pass over the feed bar 33 due to the eccentricity and longitudinal taper of the feed bar serves to wedge the pen point 40 firmly between the feed bar and the wall of the counterbore 18 in the sleeve. As the sleeve 14 is screwed inwardly, the shoulder 19 intermediate the central bore 16 and the counterbore 18 through the sleeve passes over and engages with the shoulder 35 at the juncture of the cylindrical forward section with the cylindrical rear portion of the feed bar, thereby securing the feed bar against inward movement. The gasket 32 will be compressed between the bottom wall of the counterbore 20 in the sleeve 14 and the shoulder formed between the forward extension 27 and the main body por-

tion of the insert plug 24 to form a liquid proof seal between the insert plug 24, and the counterbore 22 through the sleeve 14. Since the depth of the counterbore 22 in the sleeve 14 is greater than the length of the forward extension 27 on the insert plug 24, the extension cannot abut the bottom of the counterbore and prevent compression of the gasket 32.

In the operation of the pen, the rear cylindrical extension 39 on the insert plug 24 partially fills up the lower part of the ink well in the barrel 10 and the counterbore 25 in the insert plug, thereby forcing the last remaining ink in the ink well toward the circumference of the latter where it may more readily flow through the main feed grooves 36-36. The grooves 36-36 are feed grooves in the sense that the flow of the ink through these grooves is unrestricted. In the assembled relationship, the portion of the pen point 40 or nib directly above the split section overlies the juncture of the main feed grooves 36-36 with the capillary grooves 38-38, as shown in Fig. 2. The free flow of ink through the feed grooves 36-36 is therefore terminated at this point, the flow through the continuation channels 38-38 being by capillary action.

If it is desired to replace one point 40 with another, such as a coarse point with a fine, or vice versa, it is only necessary to unscrew the sleeve 14, remove the old point, place the new point around the forward cylindrical portion of the feed bar 33, and replace the sleeve 14. Since the gasket 32 is not acted upon by the threads 23 in the sleeve 14, it will not become worn due to continued removal and replacement of the sleeve 14.

I claim:

1. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and rear and forward extension members thereon, said forward extension member having a gasket-receiving groove therein, means for securing the insert plug to the barrel, a pen nib retaining-sleeve having a bore therethrough and a counterbore extending from the outer end of said sleeve, a second counterbore extending from adjacent the inner end of said sleeve, said forward extension plug member extending into the retaining-sleeve counterbore, a gasket in the groove of the insert plug at the juncture of the rear body portion of the sleeve and the main body portion of the insert plug, means for uniting the insert plug to the pen nib retaining-sleeve, a feed bar extending through said insert plug in said retaining-sleeve and aligning said members, said feed bar having a pair of primary longitudinal feed grooves extending from one end towards the other end, capillary grooves forming extensions of the primary grooves, and a pen nib overlying said grooves, said capillary grooves carrying the ink to the point of the pen nib and keeping the latter supplied at all times with ink.

2. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and rear and forward extension members, means for securing the insert plug to the barrel, a pen nib retaining-sleeve having rear and forward body portions and having a bore therethrough and a counterbore extending from the outer end of said sleeve, and a second counterbore extending from the end of the rear body portion, a gasket-receiving groove at the juncture of the

rear body portion of the sleeve and the main body portion of the insert plug, a gasket in said groove, the length of the forward extension member of the insert plug being less than the second counterbore of said retaining-sleeve to thereby facilitate the free flow of ink through the fountain pen, means for uniting the insert plug to the retaining-sleeve, a feed bar extending through said insert plug in said retaining-sleeve and aligning said members, said feed bar having a pair of primary longitudinal feed grooves extending from one end towards the other end, and capillary grooves forming extensions of the primary grooves, and a pen nib overlying said grooves, said capillary grooves carrying the ink to the point of the pen nib and keeping the latter supplied at all times with ink.

3. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and rear and forward extension members thereon, said forward extension member having a gasket-receiving groove therein, means for securing the insert plug to the barrel, a pen nib retaining sleeve having a bore therethrough and a counterbore extending from the outer end of said sleeve, and a second counterbore extending from adjacent the inner end of said sleeve, said forward extension plug member extending into the retaining-sleeve counterbore, a gasket in the groove of the insert plug at the juncture of the rear body portion of the sleeve and the main body portion of the insert plug, means for uniting the insert plug to the pen nib-retaining sleeve, a feed bar extending through said insert plug in said retaining-sleeve and aligning said members, said feed bar having a pair of primary longitudinal feed grooves extending from one end towards the other end, a pair of secondary capillary grooves forming extensions of said primary grooves, a rib between said primary and secondary pairs of grooves, said rib being of reduced height throughout that part of its length which is contiguous to the primary feed grooves, and a pen nib overlying said grooves and having a portion within said sleeve, the juncture of the primary feed grooves with the capillary feed grooves being approximately at the point where the nib enters the sleeve, said capillary grooves carrying the ink to the point of the pen nib and keeping the latter supplied at all times with ink.

4. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and rear and forward extension members, a pen nib retaining-sleeve having rear and forward body portions and having a bore therethrough, and a counterbore extending from the outer end of said sleeve, and a second counterbore extending from the end of the rear body portion, a gasket-receiving groove at the juncture of the rear body portion of the sleeve and the main body portion of the insert plug, a gasket in said groove, the length of the forward extension member of the insert plug being less than the second counterbore of said retaining-sleeve to thereby facilitate the free flow of ink through the fountain pen, means for uniting the insert plug to the retaining-sleeve, means for securing the insert plug to the barrel, a feed bar extending through said insert plug in said retaining-sleeve and aligning said members, said feed bar having a pair of pri-

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primary longitudinal feed grooves extending from one end towards the other end, a pair of secondary capillary grooves forming extensions of said primary grooves, a rib between said primary and secondary pairs of grooves, said rib being of reduced height throughout that part of its length which is contiguous to the primary feed grooves, and a pen nib overlying said grooves, said capillary grooves carrying the ink to the point of the pen nib and keeping the latter supplied at all times with ink.

5. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and rear and forward extension members thereon, said forward extension member having a gasket-receiving groove therein, a pen nib retaining-sleeve having a bore therethrough and a counterbore extending from the outer end of said sleeve, and a second counterbore extending from adjacent the inner end of said sleeve, said forward extension plug member extending into the retaining-sleeve counterbore, a gasket in the groove of the insert plug at the juncture of the rear body portion of the sleeve and the main body portion of the insert plug, means for uniting the insert plug to the pen nib retaining-sleeve, means for securing the insert plug to the barrel, a feed bar extending through said insert plug in said retaining-sleeve and aligning said members, said feed bar having a pair of primary longitudinal feed grooves extending from one end towards the other end, a pair of secondary capillary grooves forming extensions of said primary grooves, a rib between said primary and secondary pairs of grooves, said rib being of reduced height throughout that part of its length which is contiguous to the primary feed grooves, said feed bar being provided with a rear extension rod projecting beyond the rear end of the rear extension member of the insert plug and into the ink present in the ink reservoir, said extension rod preventing accumulation of air bubbles in the ink reservoir, and a pen nib overlying said grooves and having a portion within said sleeve, the juncture of the primary feed grooves and the capillary feed grooves being approximately at the point where the nib enters the sleeve, said capillary grooves carrying the ink to the point of the pen nib and keeping the latter supplied at all times with ink.

6. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and rear and forward extension members, means for securing the insert plug to the barrel, a pen nib retaining-sleeve having rear and forward body portions and having a bore therethrough and a counterbore extending from the outer end of said sleeve, and a second counterbore extending from the end of the rear body portion, a gasket-receiving groove at the juncture of the rear body portion of the sleeve and the main body portion of the insert plug, a gasket in said groove, the length of the forward extension member of the insert plug being less than the second counterbore of said retaining-sleeve to thereby facilitate the free flow of ink through the fountain pen, means for uniting the insert plug to the retaining-sleeve, a feed bar extending through said insert plug in said retaining-sleeve and aligning said members, said feed bar having a pair of primary longitudinal feed grooves extending from one end towards the other end, a pair of secondary capillary

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grooves forming extensions of said primary grooves, a rib between said primary and secondary pairs of grooves, said rib being of reduced height throughout that part of its length which is contiguous to the primary feed grooves, said feed bar being provided with a rear extension rod projecting beyond the rear end of the extension member of the insert plug and into the ink present in the ink reservoir, said extension rod preventing accumulation of air bubbles in the ink reservoir, and a pen nib overlying said grooves, said capillary grooves carrying the ink to the point of the pen nib and keeping the latter supplied at all times with ink.

7. In a fountain pen, the combination of a pen nib and a feed bar having extending longitudinally thereof a pair of primary feed grooves and as continuations thereof a pair of capillary grooves, a rib between said pairs of grooves, the depth of the primary grooves being greater than the depth of the capillary grooves as measured from the top of the feed bar and the depth of the primary and the capillary grooves measured from the top of the rib being substantially the same, said capillary grooves carrying the ink to the point of the pen nib whereby ink is supplied to the point at all times, said capillary grooves being located at the extreme end of the feed bar which is adapted to underlie the pen nib.

8. In a fountain pen, a combination of a pen nib and a feed bar having extending longitudinally thereof a pair of primary feed grooves and continuous therewith a pair of capillary grooves, said pen nib overlying said grooves, the bottoms of the capillary grooves from the juncture point between the primary and capillary grooves being at a higher level with respect to the lower surface of the said feed bar than the bottoms of the primary grooves, a rib between said pairs of primary and secondary grooves, said rib from said juncture point to adjacent the forward end of the feed bar being higher with regard to the lower surface of the feed bar than the portion of the rib extending from the juncture point to the rear end of the feed bar, the depth of said pairs of grooves measured from the top surface of the rib being substantially the same.

9. In a fountain pen, a combination of a pen nib having an enclosed portion and a feed bar having extending longitudinally thereof a pair of primary feed grooves and continuous therewith a pair of capillary grooves, said pen nib overlying said grooves, the bottoms of the capillary grooves from the juncture point between the primary and capillary grooves being at a higher level with respect to the lower surface of the said feed bar than the bottoms of the primary grooves, a rib between said pairs of primary and secondary grooves, said rib from said juncture point to adjacent the forward end of the feed bar being higher with regard to the lower surface of the feed bar than the portion of the rib extending from the juncture point to the rear end of the feed bar, the depth of said pairs of grooves measured from the top surface of the rib being substantially the same, the juncture of the primary feed grooves with the capillary grooves being approximately at the point of enclosure of the nib when the pen nib is in operative assembled position with the feed bar.

10. In a fountain pen having a barrel, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main portion and reduced rear and forward extensions thereon and a bore of substantially uniform diam-

eter therethrough, the rear extension being received, with a squeeze fit in the bore through the barrel and the main body portion with a squeeze fit in the counterbore, the forward extension being threaded and having a gasket receiving groove therein at the shoulder provided by the main body portion and the reduced forward extension, a feed bar positioned in the bore of the insert plug, longitudinal grooves in the feed bar, a threaded sleeve encompassing the feed bar and adapted to hold a pen nib in place, and having an internally chamfered end to encompass a gasket in the groove in the insert plug between the main body of the insert plug and the sleeve.

11. In a fountain pen, the combination of a barrel having an ink reservoir therein, a plug insert member mounted in the ink reservoir end of the barrel, said member having a main body portion and rear and forward extension members, a pen nib-retaining sleeve member, means to unite said members, a pen nib, and a feed bar having a main body portion, a pen nib-retaining portion and a rear rod-like extension member extending into the ink in the ink reservoir and beyond the rear end of the rear extension member of the insert plug, thereby preventing admission of air bubbles in, to the pen nib-retaining portion, the pen nib-retaining portion of the feed bar having longitudinally thereof a pair of primary feed grooves, and as continuations thereof a pair of capillary grooves, and a rib separating said pair of grooves, the depth of the primary feed grooves being greater than the capillary grooves as measured from the top of the feed bar and the depth of the grooves measured from the top of the rib being substantially the same, said capillary grooves carrying the ink to the point of the pen nib whereby ink is supplied to the point at all times, said capillary grooves being located at the extreme end of the feed bar which is adapted to underlie the pen nib.

12. In a fountain pen having a barrel, an ink reservoir therein, a bore through the barrel, a counterbore extending from one end of the barrel, an insert plug having a main body portion and first and second reduced cross sectional portions thereof, and having an aperture of uniform cross section axially therethrough, said first reduced portion having a gasket receiving groove at the junction of said main body portion and said first reduced portion, means for securing the insert plug to the barrel, a pen nib retaining sleeve having a bore therethrough and a counterbore extending from the outer end of said sleeve, a second counterbore extending from adjacent the inner end of said sleeve, said plug first reduced portion extending into the retaining sleeve counterbore, a gasket in the groove of said first reduced portion, means for uniting the insert plug to the pen nib retaining sleeve, a feed bar having a main portion with a slant end and a diametrically reduced extension portion, the junction of said main portion and said extension portion providing a shoulder of diameter equal substantially to the diameter of the aperture in the insert plug and said extension portion forming an annular space with said insert plug, said feed bar extending through said insert plug, and having primary

longitudinal feed grooves extending from said shoulder toward the slant end, and capillary grooves forming extensions of the primary grooves at said slant end, said feed bar rear extension projecting beyond the rear end of the second reduced portion of the insert plug and into the ink reservoir, said extension portion preventing the trapping of air in the ink reservoir adjacent the shoulder portion of the feed bar, and said capillary grooves providing ducts between the primary feed grooves and the point of the pen.

13. In a fluid writing pen having a fluid reservoir, a writing nib, and means for supplying fluid from said reservoir to said nib, said means comprising an insert plug, a sleeve and a feed bar, said insert plug having an aperture of uniform cross section extending axially therethrough, and having a generally cylindrical outer surface having a first and a second reduced portion, said first reduced portion being adapted for insertion into a barrel, and said second reduced portion being adapted to internally engage said sleeve, said feed bar having feed grooves therein and having a main portion, and a diametrically reduced extension portion, the junction of said main portion and said extension portion providing an annular shoulder the outer diameter of which is substantially equal to the diameter of said insert plug aperture, thereby providing a closure, except for said feed grooves, for said insert plug and said barrel, said reduced extension portion extending through and projecting outwardly from the said first reduced portion of said insert plug.

14. In a fountain pen, a feed bar comprising a main cylindrical portion, a first end tapered portion and a second end reduced cylindrical portion, a pair of parallel primary grooves separated by a rib in said main cylindrical portion, said feed grooves having a uniform depth substantially one and one-half times their width, and a pair of capillary grooves in said first end tapered section having a depth equal substantially to one half the depth of said primary feed grooves, said capillary grooves being located at the extreme end of the feed bar which is adapted to underlie the pen nib.

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