

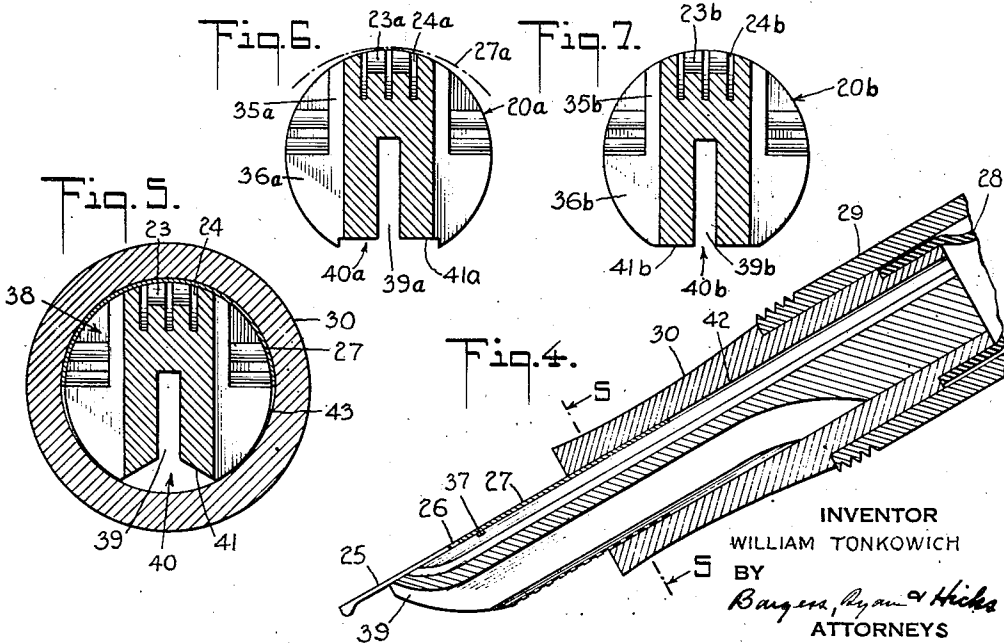
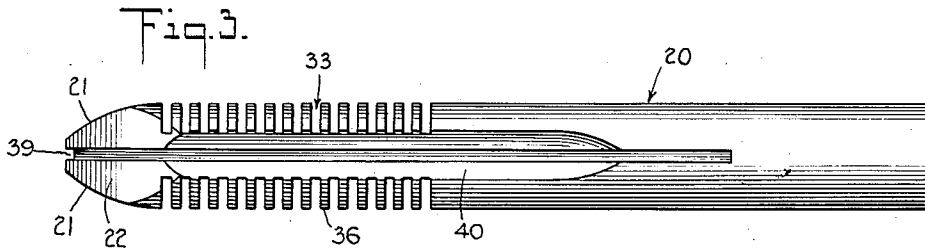
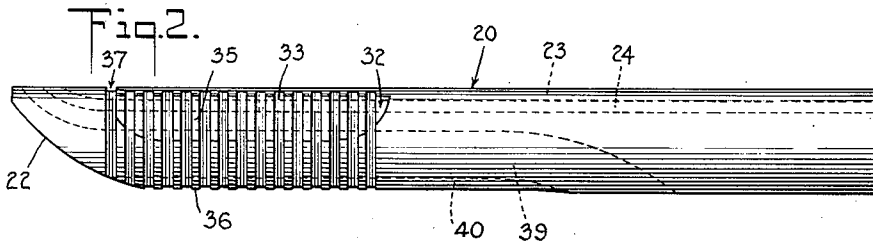
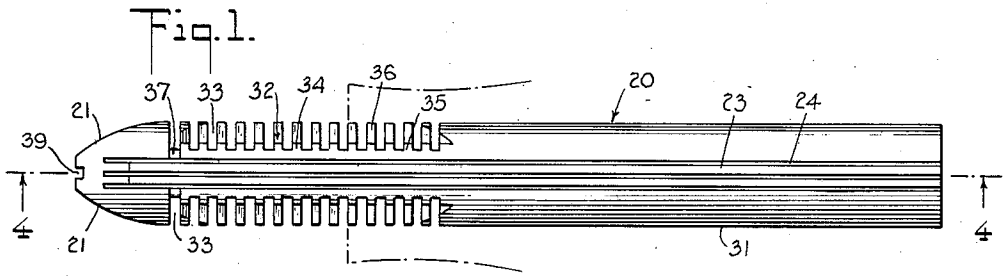
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FOUNTAIN PEN

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1

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FOUNTAIN PEN

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The present invention relates to a novel and improved fountain pen and relates more particularly to a new and improved feed for a fountain pen.

A general object of the invention is to provide a feed for a fountain pen of improved construction having an increased ink storage capacity which functions to prevent the flooding of ink that is in excess of that required for writing. In addition, the feed is of simple construction, is strong and is inexpensive to manufacture. Other features and advantages of the invention will be apparent and best understood from the following description and the accompanying drawings in which:

Fig. 1 is a plan view taken from the top of a feed bar for a fountain pen embodying the present invention and is on a greatly enlarged scale;

Fig. 2 is a side view of the feed bar illustrated in Fig. 1;

Fig. 3 is a bottom view of the feed bar shown in Fig. 1;

Fig. 4 is a longitudinal section of a fountain pen feed assembly taken along the line 4—4 of Figure 1 of the feed bar illustrated in Fig. 1 and with the pen in writing position;

Fig. 5 is a transverse section taken along the line 5—5 of Fig. 4, but on an enlarged scale; and

Figs. 6 and 7 are transverse sections illustrating modifications of the feed bar illustrated in Fig. 1.

Referring now to the drawings in detail and in particular to the embodiment of the invention illustrated in Figs. 1 through 5, there is a feed bar 20. One end of the feed bar is generally cylindrical in shape and at the other end is bevelled laterally as indicated at 21 and upwardly as indicated at 22 to form a reduced tip.

The upper surface of the feed bar 20 has a conventional ink feed groove 23 cut therein with fissures 24 at the bottom of the feed groove. The feed groove and the fissures start at a point behind the tip of the feed bar 20 and extend lengthwise of the feed bar beneath the flexible point 25 and breather hole 26 of a nib 27 to the end of the cylindrical portion of the feed bar where the feed groove and the fissures communicate with an ink reservoir 28. The ink reservoir 28 may be the usual collapsible rubber sac which is located within a fountain pen barrel 29 and the mouth of the sac is attached to the inner end of a feed section 30 in the usual manner. The feed section 30 is secured in the open end of the barrel 29 and the cylindrical end of the feed bar 20 is inserted in the bore of the feed section with the heel of the pen point 27 being held between the feed section and the feed bar in position for writing.

Under normal conditions when the pen is in writing position, as illustrated in Fig. 4, ink is drawn by capillary attraction from the ink reservoir 28 through the fissures 24 in the feed groove 23 to the flexible point 25 of the nib 27 and air may pass through the breather hole 26 and upwardly through the groove 23 into the ink reservoir 28 so as to relieve any excessive back pressure built up therein.

2

From a point slightly to the rear of the tip of the feed bar 20 and extending to the cylindrical portion thereof, the top of the feed bar 20 is recessed along both sides of the groove 23 so as to form laterally extending side pockets 32 on both sides of the feed bar. The body of the nib 27 extends over the side pockets 32 and thus, forms capillary passageways 38 extending longitudinally of the feed bar when the feed bar and the nib are assembled in the bore of the feed section. In addition, a series of transverse capillary passageways 33 forming ink storage chambers are cut in side walls of the side pockets 32 and in the sides of the feed bar 20. All of the transverse passageways 33 except the first one are separated from the ink feed groove 23 by walls 34 extending lengthwise on both sides of the ink feed groove 23. Ladders or partitions 35 and 36 extending along the sides of the side pockets 32 and the sides of the feed bar, respectively, separate the transverse passageways 33 from each other and in order to obtain an increased ink storage capacity in the feed bar 20, which has a relatively small cross-sectional area, the ladder cuts forming the transverse passageways 33 and the side pockets 32 extend to a point within the feed section 30, as indicated in Fig. 4.

The first of the transverse passageways 33 on each side of the ink feed groove 23 communicate with the ink feed groove 23 through transverse channels 37. In this connection, it might be noted, as indicated by the dot and dash lines in Fig. 6, that the body of the nib 27 has a somewhat greater radius than the feed bar and this difference in curvature forms a small passageway between the nib and the feed bar at the lower or forward ends thereof and particularly in the vicinity of the breather hole 26 through which ink from the feed groove may flow. However, the channels 37 assure that ink from the feed groove 23 may flow into the first passageway 33 when there is a supply of ink in the ink feed groove 23 in excess of that required for writing such as may result from an abnormal increase in the pressure in the ink reservoir 28. The lateral passageways 38 formed by the side pockets 32 and the pen point then draw the ink from the first transverse passageways 33 upwardly into the side pockets 32. The ink that is thus drawn into the side pockets 32 will be drawn into the transverse passageways 33 in the sides of the side pockets and of the feed bar where it will be held and stored. This prevents the ink in the feed groove from passing out of the breather hole 26 and flooding the pen point.

The transverse passageways 33 open at their lower ends into an enlarged opening 40 which leads into a back groove 39 extending along the bottom of the feed bar. The back groove 39 starts at the tip of the feed bar 20 where it communicates with the flexible nib 25 of the pen point 27 and extends lengthwise of the feed bar to a point within the section 30. The depth of the back groove 39 may be equal to three quarters of the diameter of the feed bar 20 and thus, has a large ink storage capacity therein. The back groove 39, thus, serves to draw off any drops of excess ink that may appear at the point of the nib.

The enlarged mouth or opening 40 leading into the back groove also extends into the feed section 30 and provides an air relief passage through which air from the feed section may escape when ink flows into the passageways 33 or the parts of the back groove that are within the section. The opening 40 may be formed by making V-cuts 41 in the bottom of the feed bar at the top of the back groove, as indicated in Fig. 5. Figure 6 shows in section similar to Figure 5 a modified feed bar 20a having an ink feed groove 23a cut with fissures 24a and a back groove 39a provided with enlarged opening

3

40a. The nib is shown at 27a, and partitions 35a and 36a correspond to partitions 35 and 36 of Figure 1. Figure 7 shows in section like Figure 6 a modified feed bar 20b having an ink feed groove 23b cut with fissures 24b and a back groove 39b provided with an enlarged opening 40b. Partitions 35b and 36b correspond to those of Figure 6 at 35a and 35b. In general, except for the enlarged openings 40, 40a and 40b all of the feed bars of Figures 1-7 are alike. The enlarged opening may also be formed by recessing the feed bar 20a at the edges of the back groove 29, as indicated at 41a in Fig. 6, or by flattening the bottom of the feed bar 20b, as indicated at 41b in Fig. 7. Under ordinary conditions, any ink in the transverse passageways 33 is held there and will not enter the back grooves, but the open ends of the passageways permit air to be expelled from the transverse passageways 33 into the enlarged opening 40 of the back groove.

The diameter of the feed bar 20 is the same, or slightly less than, the diameter of the bore of the feed section so that when the heel of the nib 27 is forced between the feed section 30 and the feed bar 20, the compression of the material from which the feed bar and the section are made holds the nib in place. Thus, when the pen point and the feed bar are assembled in the feed section, the top and sides of the feed bar 20 are spaced from the section forming passageways 42 and 43, as shown in Figs. 4 and 5, respectively. The passageways 42 and 43 extend around the heel of the pen point 27 and connect the side pockets 32, the transverse passageways 33 and the back groove 39 with the ink feed groove 23 at a point within the section above the end of the pen point 27. The passageways 42 and 43 permit ink to flow back into the ink reservoir from the storage spaces when the pen is in point-up position and the atmospheric pressure is greater than the pressure of the air in the ink reservoir. The compression of the heel of the pen point 27 between the feed section and the feed bar causes the heel of the pen point to conform to the shape of the feed bar, but this condition does not prevail throughout the entire length of the pen point as mentioned previously.

The back groove 39, the side pockets 32 and the transverse passageways 33 are so proportioned in relation to the feed groove 23 and the fissures 24 that ink will flow more readily from these external storage spaces than it will from the internal reservoir 28. Thus, a pen which is in active use will be prepared for the next tendency to flood by writing out the ink from the external storage spaces. This clears the ink collectors of the ink stored therein so that said collectors are at all times ready to collect any ink that flows toward the point of the pen in excess of that required for writing.

As a specific example of such proportions, in the feed bar 20, illustrated in Figs. 1 through 5, which has a diameter of .197 inch, the feed groove 23 is .056 inch in width and .020 inch in depth and the fissures 24 are .008 inch in width and .020 inch in depth. The back groove 39 is .020 inch in width and .120 inch in depth (at the center thereof). The transverse passageways 33 are .020 inch in width and are .055 inch in depth along the sides of the feed bar. The side pockets 32 are .040 inch wide and .090 inch in height. Of course, it will be understood that the dimensions given above are merely by way of example and that they may be varied.

It will be understood that various modifications and changes may be made in the embodiments of the invention illustrated and described herein without departing from the scope of the invention as defined by the following claims.

I claim:

1. A feed bar for a fountain pen in which one end of the feed bar is fitted within the bore of a feed section with a heel portion of a pen nib being held between the feed bar and the feed section, said feed bar having an ink feed groove extending longitudinally along the top thereof, said feed groove communicating with an ink res-

4

ervoir at said one end of the feed bar and with a point of the pen nib at the other end of the feed bar, which is characterized by said feed bar having side pockets extending along each side of the feed bar intermediate its ends, a series of transverse ladder cuts in the sides of the feed bar and the side walls of each of the side pockets forming capillary ink storage chambers therein, a number of said ink storage chambers being located within the feed section, portions of adjacent sides of the feed bar being spaced from each other whereby the ink storage chambers on each side of the feed bar are in communication with each other through capillary passageways formed between the pen nib and the feed bar, said feed bar having transverse channels extending between the ink feed groove and the side pockets on each side of the feed bar, and a back groove extending along the bottom of the feed bar from the tip thereof to a point on the feed bar located within the feed section, said back groove communicating with the pen point at the tip of the feed bar and having an enlarged opening thereto intermediate its ends, said enlarged opening extending from a point on the feed bar located within the feed section to a point on the feed bar located outside of the feed section and forming a passageway extending between the ink storage chambers located within the feed section and the extension of the feed section.

2. A feed bar for a fountain pen in which one end of the feed bar is fitted within the bore of a feed section with a heel portion of a pen nib being held between the feed bar and the feed section, said feed bar having an ink feed groove extending longitudinally along the top thereof, said feed groove communicating with an ink reservoir at said one end of the feed bar and with a point of the pen nib at the other end of the feed bar, which is characterized by said feed bar having side pockets extending along each side of the feed bar intermediate its ends, a series of transverse ladder cuts in the sides of the feed bar and the side walls of each of the side pockets forming capillary ink storage chambers therein, a number of said ink storage chambers being located within the feed section, portions of adjacent sides of the feed bar being spaced from each other whereby the ink storage chambers on each side of the feed bar are in communication with each other through capillary passageways formed between the pen nib and the feed bar, said feed bar having transverse channels extending between the ink feed groove and the ink storage chambers on each side of the feed bar formed by the ladder cuts closet to the tip of the feed bar, and a back groove extending along the bottom of the feed bar from the tip thereof to a point on the feed bar located within the feed section, said back groove communicating with the pen point at the tip of the feed bar and having an enlarged opening thereto intermediate its ends, said enlarged opening extending from a point on the feed bar located within the feed section to a point on the feed bar located outside of the feed section and forming a passageway communicating with the ink storage chambers located within the feed section and the exterior of the feed section.

3. In a fountain pen, the combination of a feed section having a bore extending therethrough, a feed bar having an inner end fitted within the bore of the feed section and an outer end extending beyond the feed section, said feed bar having a curved outer surface, the inner end of said feed bar being connected to an ink reservoir, a pen nib having a heel portion held between the feed section and the feed bar, said pen nib having a greater radius of curvature than the feed bar and having a flexible point extending beyond the outer end of the feed bar, said feed bar also having an ink feed groove communicating with the ink reservoir and extending lengthwise along the top thereof from its inner end to a point adjacent the point of the pen nib with recesses forming side pockets extending along opposite sides of the feed bar adjacent said ink feed groove, a series of transverse ladder cuts

5

in the sides of the feed bar, said ladder cuts extending through the side pockets and forming capillary ink storage chambers in the sides of the feed bar and the side pockets, a number of said ink storage chambers being located within the feed section, said ink storage chambers being in communication with each other through capillary passageways formed between the pen nib and the feed bar, transverse channels in the feed bar extending between the ink feed groove and one of the ink storage chambers formed by the ladder cuts on each side of the feed bar, and a back groove extending lengthwise of the feed bar from the outer end of the feed bar to a point within the feed section, said back groove communicating with the flexible point of the pen nib at a point below the end of the ink feed groove and having an enlarged opening thereto extending on both sides of the point at which the back groove enters the feed section, said enlarged opening forming a passageway communicating with the ink storage chambers located within the feed section and the exterior of the feed section.

4. A fountain pen of the type having a feed section with a bore extending therethrough, a feed bar having a generally cylindrical shank fitted within the bore of the feed section and a tapered tip extending beyond the feed section, said feed bar having an ink feed groove extending lengthwise along the top thereof, a pen nib having a heel held between the feed section and the feed bar and a flexible point extending beyond the tapered tip of the feed bar, said pen nib having a greater radius of curvature than that of the shank of the feed bar which is characterized by said feed bar having recesses extending along both sides thereof adjacent the ink feed groove, a series of ladder cuts in the side walls of said recesses and in the sides of the feed bar, said ladder cuts forming capillary ink storage chambers and extending on both sides of the point where the feed bar enters the feed section, said feed bar having transverse channels connecting the ink feed groove with the ink storage chambers on each side of the feed bar, capillary passageways formed between the pen nib and the feed bar connecting the ink storage chambers on the respective sides of the feed bar with each other and a back groove extending along the bottom of the feed bar to a point within the feed section, said back groove communicating with the flexible tip of the pen and having an enlarged opening extending on both sides of the point where the feed bar enters the feed section, said enlarged opening forming a passageway com-

6

municating with the ink storage chambers within the feed section and the exterior of the feed section.

5. A feed bar for a fountain pen in which one end of the feed bar is fitted within the bore of a feed section with a heel portion of a pen nib being held between the feed bar and the feed section, said feed bar having an ink feed groove extending longitudinally along the top thereof, said feed groove communicating with an ink reservoir at said one end of the feed bar and with a point of the pen nib at the other of the feed bar, which is characterized by said feed bar having side pockets extending along each side of the feed bar intermediate its ends, a series of transverse ladder cuts in the sides of the feed bar and the side walls of each of the side pockets, said ladder cuts forming capillary ink storage chambers with a number of said ink storage chambers being located within the feed section, portions of adjacent sides of the feed bar being spaced from each other whereby the ink storage chambers on each side of the feed bar are in communication with each other through capillary passageways formed between the pen nib and the feed bar, said feed bar having transverse channels extending between the ink feed groove and the side pockets on each side of the feed bar, and a back groove communicating with the pen point at the forward end of the feed bar and extending along the bottom of the feed bar to a point on the feed bar located within the feed section, said back groove normally receiving ink only from the pen point at the forward end of the feed bar and having an enlarged opening thereto intermediate its ends, said enlarged opening extending from a point on the feed bar located within the feed section to a point on the feed bar located outside of the feed section and forming an air outlet passageway communicating with the ink storage chambers located within the feed section and the exterior of the feed section.

References Cited in the file of this patent

UNITED STATES PATENTS

1,574,929	Pollock	Mar. 2, 1926
1,750,410	Kovacs	Mar. 11, 1930
2,101,304	Wright	Dec. 7, 1937
2,292,381	Klagges	Aug. 11, 1942
2,380,763	Juelss	July 31, 1945

FOREIGN PATENTS

406,609	Germany	Nov. 25, 1924
215,964	Switzerland	Dec. 16, 1941