

Aug. 3, 1954

R. T. WING
FOUNTAIN PEN

2,685,273

Original Filed March 27, 1946

3 Sheets-Sheet 1

Fig. 1.

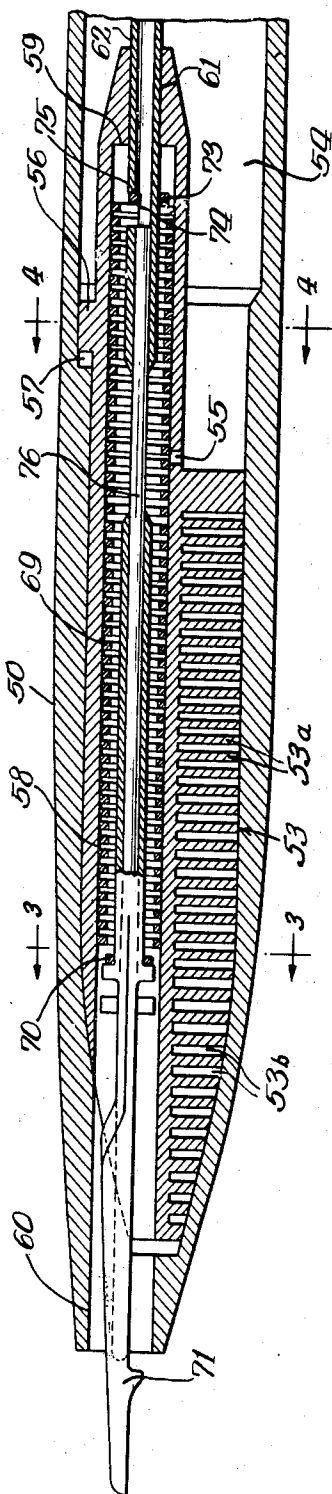
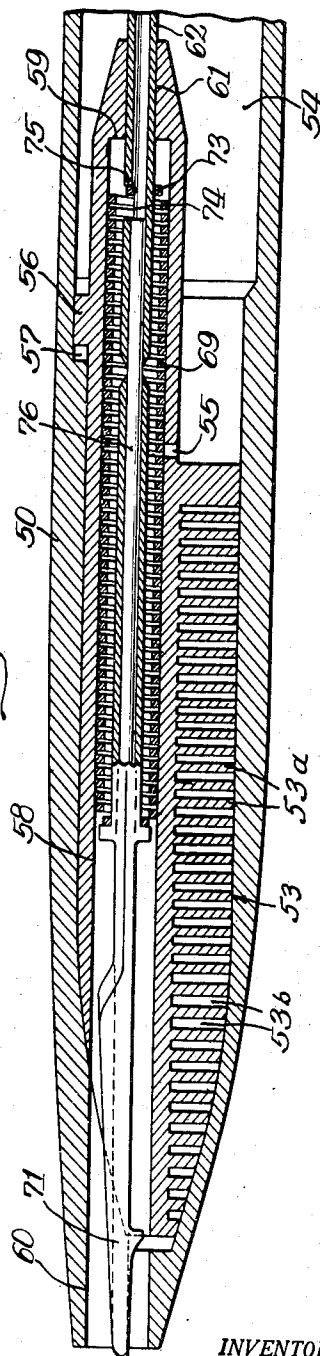


Fig. 2.



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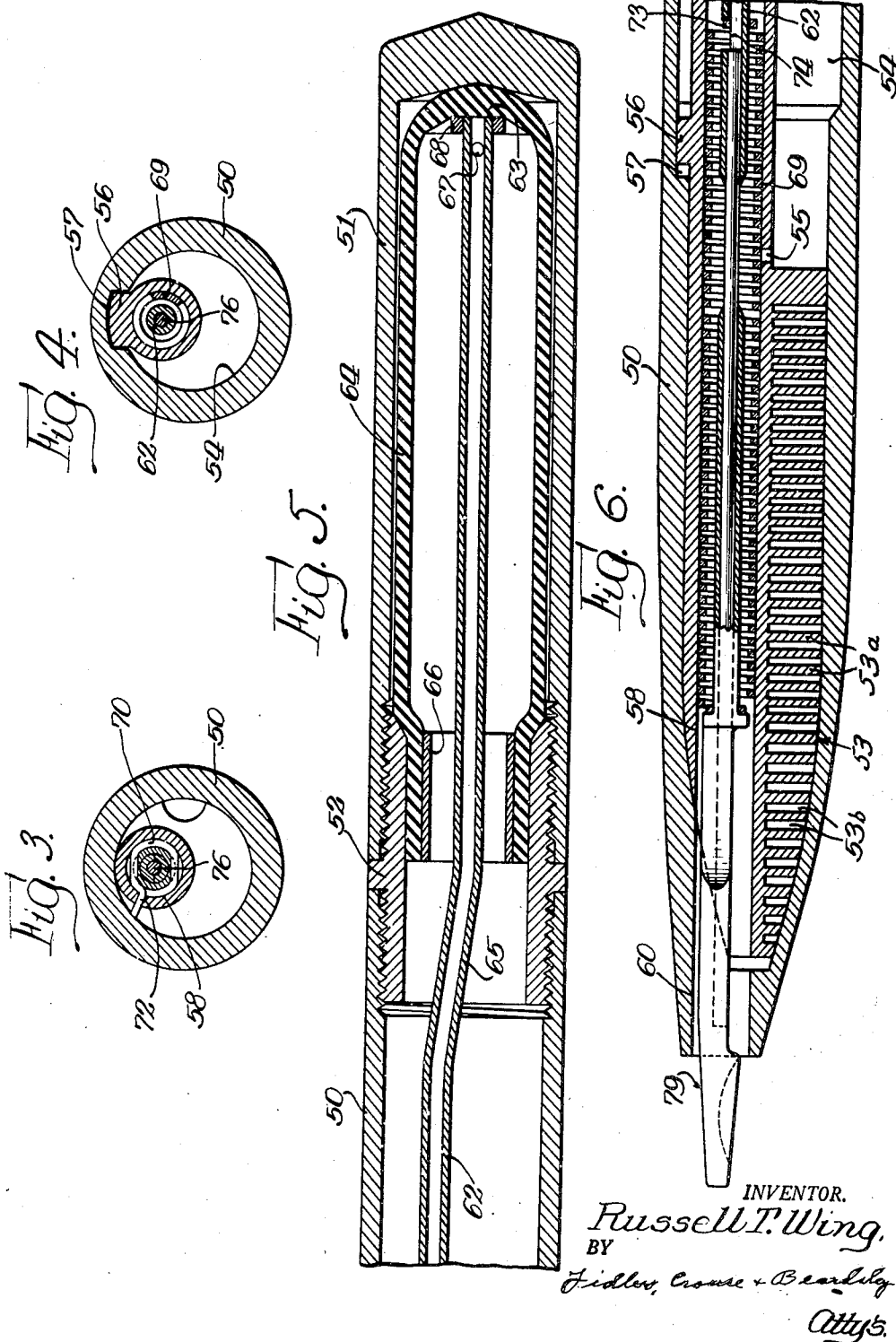
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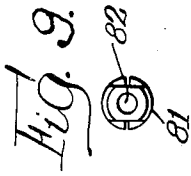
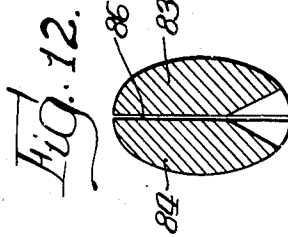
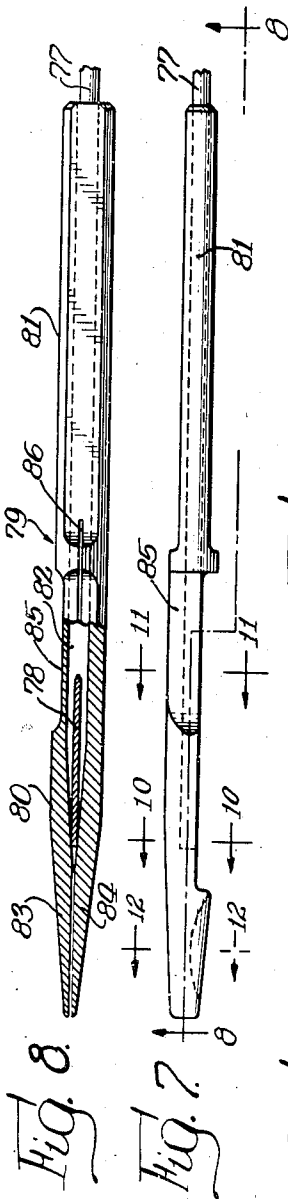
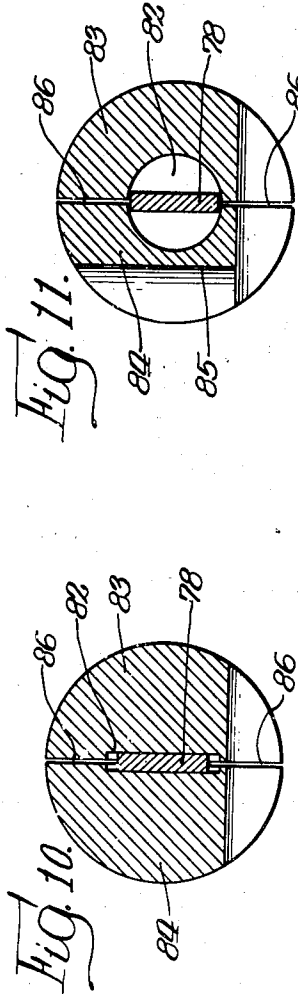
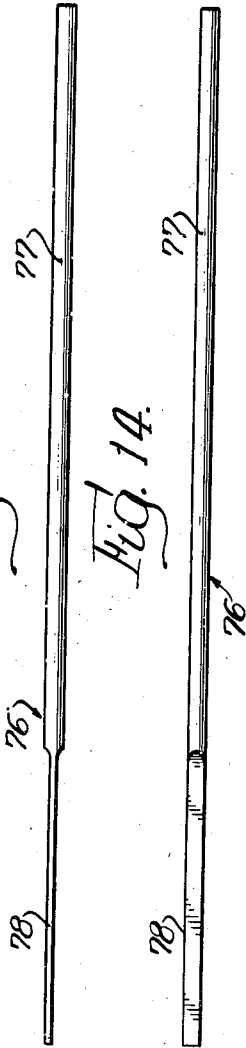
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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

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Original application March 27, 1946, Serial No. 657,509. Divided and this application March 23, 1951, Serial No. 217,108

5 Claims. (Cl. 120—45.6)

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This application is a division of my copending application, Serial No. 657,509, filed March 27, 1946, now Patent No. 2,581,740, issued January 8, 1952.

This invention relates to fountain pens and has to do more particularly with a fountain pen which will operate successfully with India ink and is, therefore, capable of being employed as a drafting pen. It further relates to a novel drafting pen nib and to a pen nib which can be used in place of the drafting nib for writing or lettering.

One of the primary objects of my invention is to provide means effective to obviate or offset the tendency of India ink quickly to clog the capillary feed channel which necessarily is employed in all fountain pens—thus making it possible to provide a fountain pen which will operate successfully with that kind of ink, or with any other ink.

Another object is to provide a successful fountain ruling pen.

A further object is to provide a fountain ruling pen which can easily be kept in continuous operation for relatively long periods and which also is readily adapted for quick adjustment as to line width.

Still another object is to provide a drafting or ruling pen nib which can be used successfully as a component part of my new fountain pen.

I have found that by providing a suitable cleaner element which is mounted in and movable lengthwise of the capillary feed channel, it is possible and practicable to clear said channel whenever it becomes obstructed by reason of the ink congealing or partially congealing therein; and by virtue of such provision I am able to produce a fountain pen which can successfully be used with India ink and the like.

In carrying out my invention I prefer to utilize a novel arrangement which brings about a movement of the cleaner element along the feed channel in response to pressure applied to the end of the pen nib—thus enabling a user to quickly and easily clear the feed channel whenever it becomes clogged.

I also prefer, in carrying out my invention, to employ a novel construction wherein the cleaner element is utilized for adjusting the drafting pen nib to effect any desired line width within its range.

Other and further objects of my invention will be apparent as the detailed description progresses.

Referring to the drawings:

Figure 1 is an enlarged longitudinal sectional

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view of the front end portion of a fountain pen structure in accordance with my invention;

Fig. 2 is identical with Fig. 1, except that it shows the pen nib retracted into the barrel and its restoring spring correspondingly compressed;

Fig. 3 is a transverse sectional view taken along line 3—3 of Fig. 1;

Fig. 4 is a transverse sectional view taken along line 4—4 of Fig. 1;

Fig. 5 is an enlarged longitudinal sectional view of the rear end portion of the fountain pen whereof Figs. 1 and 2 are views of the front end portion;

Fig. 6 is an enlarged longitudinal sectional view identical with Fig. 1, except that there is substituted the drafting nib of Figs. 7—12 in place of the writing nib shown in Figs. 1 and 2;

Fig. 7 is an elevational view of a drafting nib intended for use in the fountain pen of Figs. 1—6;

Fig. 8 is a view, partly in section and partly in elevation, taken along line 8—8 of Fig. 7 with an intermediate portion of the nib adjusting and cleaner tongue omitted, for the sake of clarity;

Fig. 9 is a rear end view of the drafting nib;

Fig. 10 is a greatly enlarged transverse sectional view taken along line 10—10 of Fig. 7;

Fig. 11 is a greatly enlarged transverse sectional view taken along line 11—11 of Fig. 7;

Fig. 12 is a greatly enlarged transverse sectional view taken along line 12—12 of Fig. 7;

Fig. 13 is an elevational view of the nib adjusting and cleaner tongue constituting a component part of the pen structure of Figs. 1—6; and

Fig. 14 is a right projection in side elevation of the same detail.

The pen structure of Figs. 1—6 comprises a barrel 50 to the rear end of which is detachably connected a cap 51—see Fig. 5. The latter is connected to the barrel through the medium of a threaded bushing 52.

Mounted in the forward end of the barrel is a feed element or governor 53 which has a considerable number of radial fins 53a spaced apart to form intervening narrow capillary cells 53b which constitute, jointly, an auxiliary reservoir for the reception and storage of ink which may be forced out of the main reservoir in excess of what is required for writing—said cells being operative, when filled, to feed out the stored ink to the nib. At the rear of governor 53 is a main reservoir 54 which connects with the governor through an orifice 55. The governor is restrained against rotation by means of a boss 56 which engages a recess 57 formed in the barrel—see Fig. 4.

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Governor 53 has a lengthwise bore 58 which extends from the front end thereof rearwardly to the point 59 and is in alinement with a bore 60 of the same diameter in the front end of the barrel. The rear end of the governor has a bore 61 which provides a sliding fit for a breather tube or fill stem 62 which extends rearwardly to the point 63—see Fig. 5—where it abuts the inside end surface of a rubber sac 64. Tube 63 is offset at 65 in order to centralize it with sac 64. The latter is cemented at its forward end to bushing 52 and is held in firm engagement therewith by a liner 66. The rear end of tube 62 has a breather opening 67 and is provided with a flange 68 which affords an increased surface area bearing against the rubber sac.

Fitted in bore 58 is a long helical spring 69 made, preferably, of wire of square cross-section. The front end of said spring has a turn 70 of reduced diameter to receive the shank of a pen nib 71, and said turn is flattened on two sides, as shown in Fig. 3, to engage the two flat sides of the pen nib shank—see details of nib shank in Figs. 7-9. The extreme forward end of the wire forming spring 69 is bent outward radially as depicted in Fig. 3 to engage a slot 72 cut in and extending lengthwise of the governor. Slot 72 terminates forwardly at the position of turn 70 in Fig. 1 and extends rearwardly from that point for a suitable distance. The slot 72 provides communication between the bore 58 and cells 53b for the passage of ink therebetween.

The rear end of spring 69 has a turn 73 of reduced diameter which seats in a notch 74 cut in tube 62 and bears against a shoulder 75 defining the rear extremity of said notch. Spring 69 continuously urges tube 62 rearwardly. Thus, when cap 51 is partially or wholly unscrewed from bushing 52, tube 62 will move rearwardly. The limit of such movement is determined by spring turn 73 striking the bottom of bore 58 at point 59. Spring 69 with its turns defines therebetween a capillary ink feed passage communicating with the feed passage in the nib.

Fixedly secured in the forward end of tube 62 is a nib adjusting and cleaner tongue 76 which is shown in detail in Figs. 13 and 14. Said tongue comprises a round shank 77 and a flattened forward portion 78. Tongue 76 moves with tube 62 and it performs the function of stirring up the partially congealed ink in the capillary feed channel of the nib and also for making adjustments in the drafting or ruling pen nib, as will be explained more in detail later.

Nib 71, shown in Figs. 1 and 2, is a writing and lettering nib substantially identical with the first form of nib disclosed in the copending application above referred to, except for the shank portion. The shank portion of nib 71 is similar to the shank portion 81 of the nib 79 shown in Figs. 7-12, which will be referred to in connection with those figures. The pen of the present invention is adapted for utilizing either a writing and lettering nib, such as the nib 71, or a drafting nib such as the nib 79 shown in Figs. 7-12. Accordingly, in place of nib 71 there may be substituted the drafting nib 79 shown in Figs. 7-12. This nib includes a forward portion 80 and a shank portion 81 which is of tubular form but flattened on two opposite sides as depicted in Fig. 9. Said shank portion is identical with that of nib 71 and it has an axial bore 82 adapted to accommodate, slidably, the round shank portion 77 of tongue 76. The forward portion of nib 79 is divided lengthwise to form a pair of complemen-

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tary tines or blades 83 and 84 similar to those of a conventional ruling pen. Blade 83 is milled to a reduced thickness at 85 to render said blade resilient laterally, so that the two blades can easily be spread apart at the front end for varying the width of line produced by the nib. Bore 82 is tapered at its forward end as shown in Fig. 8, and the tip of the flattened portion 78 of tongue 76 engages the two sides of bore 82 in the manner of a wedge. Bore 82 is of rectangular configuration at section 10, as shown in Fig. 10, being thus conformed to the rectangular cross-section of the tongue.

Tongue 76 is held in its forwardmost position when cap 51 is fully screwed onto bushing 52, as shown in Fig. 5; and under that condition blades 83 and 84 are spread apart to the maximum extent. By backing off cap 51, tongue 76 is retracted and by so doing blades 83 and 84 are brought together so as to decrease the width of line produced by the nib.

As previously stated, the fountain pen of the present invention is designed primarily for use with India ink which has a distinct tendency to congeal rather quickly and, for that reason, is indisposed to continue to flow freely and continuously in a channel of capillary dimensions. To meet that situation, the pen is so designed that the tongue 76 serves also as a means for breaking up any obstruction in the ink feed channel between the blades, and it does so by passing between the blades in response to a retractive movement of the nib effected by pressing the nib inwardly of the barrel. Spring 69 is yieldable to permit retraction of the nib, as illustrated in Fig. 2, irrespective of the type of nib employed.

The spacing between the turns of spring 69 is of capillary width, so that ink flows along the spring to the forward end thereof where it enters the nib by way of slits 86, along which it travels to the tip of the nib.

It will be observed that in the pen of Figs. 1-6 the governor 53 remains stationary at all times, whereas in the pen structure of Figs. 1-9 of the parent copending application referred to above, the governor 3 retracts with the nib, as illustrated in Fig. 4 of that application.

I claim:

1. A fountain pen comprising an elongate barrel having an ink reservoir, feed means mounted in the front end of said barrel, said feed means having a lengthwise extending bore, a long helical spring mounted in said bore and co-axial therewith, an elongate breather tube telescopically connected to the rear end of said feed means and anchored to the rear end of said spring, a collapsible sac connected to the rear end of said barrel and operative to pump ink into said reservoir, said breather tube extending rearwardly through said barrel and engaging the inside of the rear end of said sac, a cap threaded to the rear end of said barrel and normally enclosing said sac, said spring continuously urging said breather tube rearwardly, said cap normally holding said breather tube in a forward position against the pressure of said spring, said tube being movable rearwardly by said spring when said cap is unscrewed, a pen nib having an axial passageway, said nib being mounted in said bore and normally extending forwardly from the front end of said barrel, and a tongue-like member anchored to said tube and extending forwardly through said axial passageway to a point near the front end of said nib, said nib being retract-

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able into the barrel against said spring by pressure applied to the front end thereof.

2. A fountain pen comprising a barrel having an ink reservoir, a feed member in the forward end of said barrel and having a longitudinal bore therein communicating with said reservoir, a pen nib slidably disposed in said bore and having a longitudinal ink feed passage therein dividing at least the forward end of said nib into two nib sections, a tongue disposed in said nib in position to enter between said nib sections, a helical spring disposed in said bore with its forward end bearing against said nib to yieldingly resist rearward movement of said nib in said bore and with its turn defining therebetween a capillary ink feed passage communicating with the interior of said bore and with the feed passage in said nib, and means normally restraining said tongue and the rear end of said spring against rearward movement upon rearward movement of said nib.

3. A fountain pen comprising a barrel having an ink reservoir, a feed member in the forward end of said barrel and having a longitudinal bore therein communicating with said reservoir, a pen nib slidably disposed in said bore and having a longitudinal ink feed passage therein dividing at least the forward end of said nib into two nib sections, a tongue longitudinally adjustably disposed in said nib in position to enter between said nib sections, a helical spring disposed in said bore with its forward end bearing against said nib to yieldingly resist rearward movement of said nib in said bore and with its turns defining therebetween a capillary ink feed passage communicating with the interior of said bore and with the feed passage in said nib, means adjustably positioning said tongue and the rear end of said spring longitudinally relatively to said barrel.

4. A fountain pen comprising a barrel having an ink reservoir, a feed member in the forward end of said barrel and having a longitudinal bore therein communicating with said reservoir, a breather tube in said barrel with its forward end in said feed member, a pen nib slidably disposed in said bore and having a longitudinal ink feed passage therein dividing at least the forward end of said nib into two nib sections, a tongue disposed in said nib in position to enter between said nib sections

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and secured at its rear end to said breather tube, a helical spring disposed in said bore with its forward end bearing against said nib to yieldingly resist rearward movement of said nib in said bore and secured at its rear end to said breather tube, with its turns defining therebetween a capillary ink feed passage communicating with the interior of said bore and with the feed passage in said nib, and means normally restraining said breather tube against rearward movement upon rearward movement of said nib.

5. A fountain pen comprising a barrel having an ink reservoir, a feed member in the forward end of said barrel and having a longitudinal bore therein communicating with said reservoir, a breather tube in said barrel with its forward end in said feed member, a pen nib slidably disposed in said bore and having a longitudinal ink feed passage therein dividing at least the forward end of said nib into two nib sections, a tongue disposed in said nib in position to enter between said nib sections and secured at its rear end to said breather tube, a helical spring disposed in said bore with its forward end bearing against said nib to yieldingly resist rearward movement of said nib in said bore and secured at its rear end to said breather tube, with its turns defining therebetween a capillary ink feed passage communicating with the interior of said bore and with the feed passage in said nib, and means adjustably positioning said breather tube longitudinally relatively to said barrel.

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