

Oct. 1, 1935.

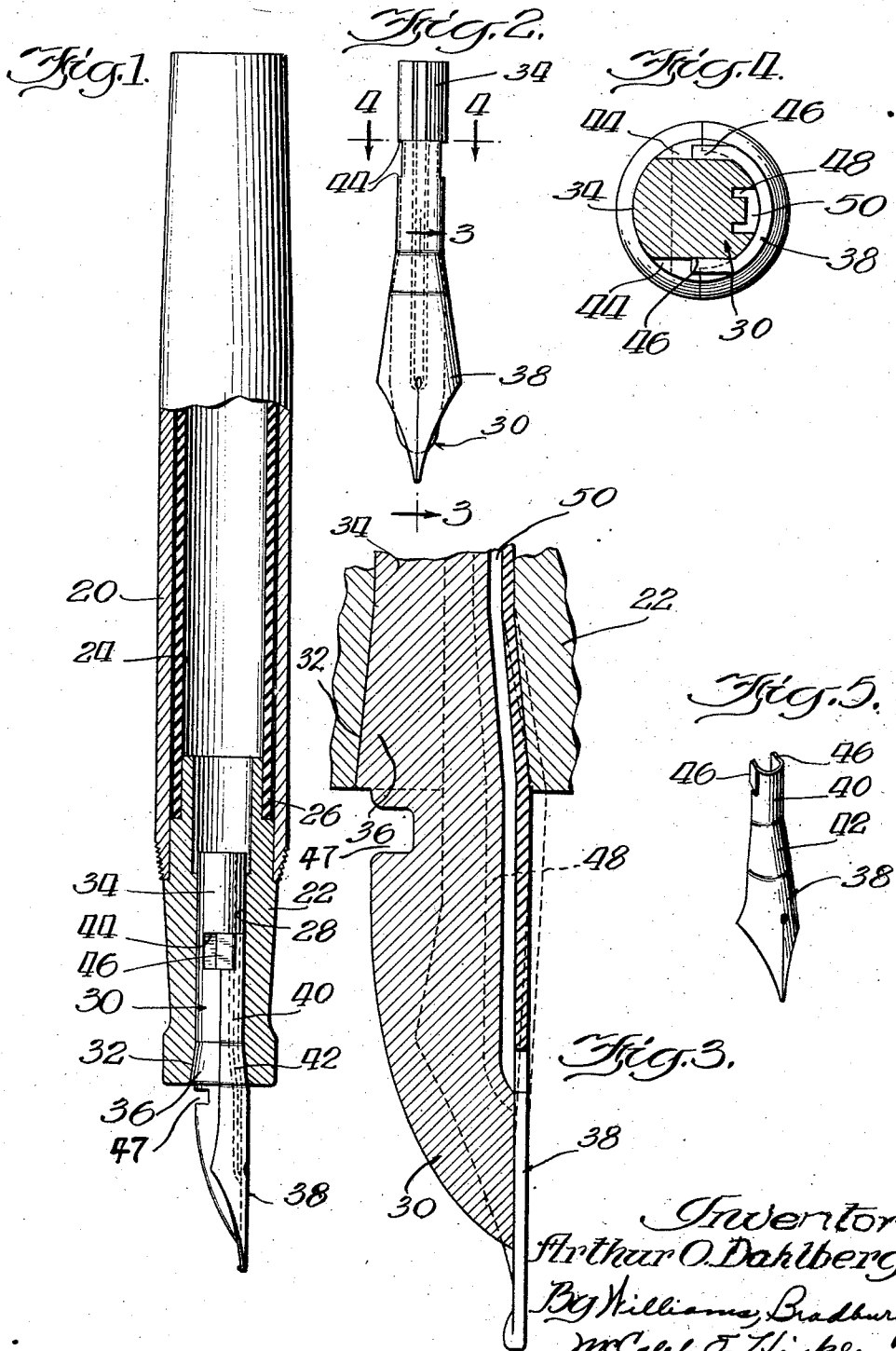
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2,016,106

FOUNTAIN PEN

Filed July 14, 1932

2 Sheets-Sheet 1



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Fig. 6.

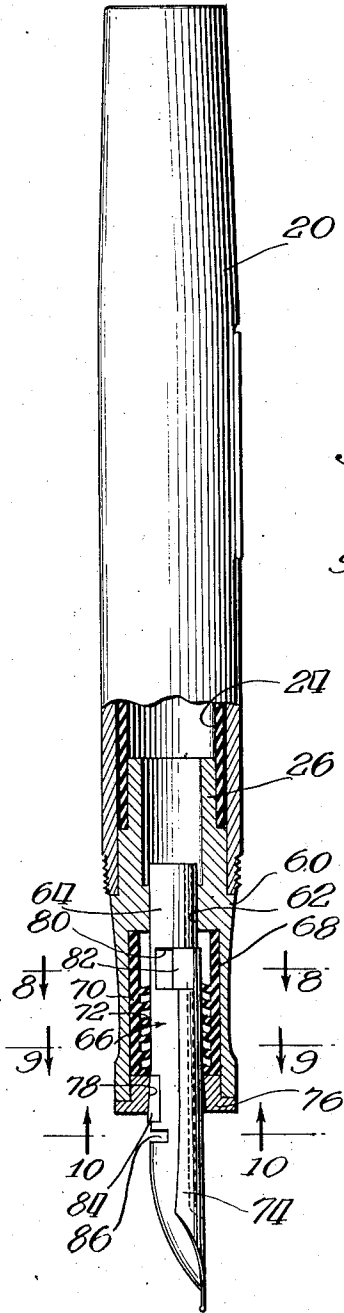


Fig. 8.

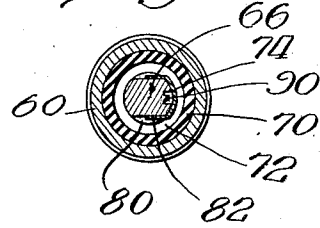


Fig. 7.

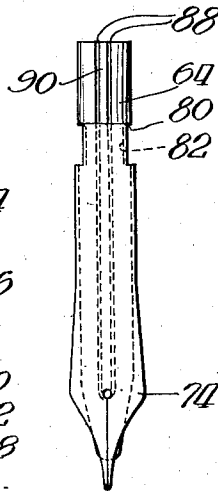


Fig. 9.

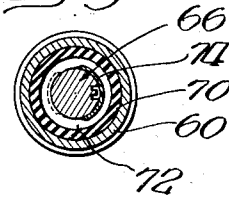
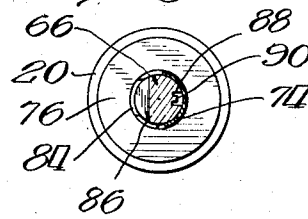


Fig. 10.



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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

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Application July 14, 1932, Serial No. 622,409

8 Claims. (Cl. 120—52)

My invention relates generally to fountain pens and more particularly to improvements in the means for securing the feed bar and nib to the pen section or barrel of the fountain pen.

5 In the manufacture of fountain pens, one of the operations requiring the greatest amount of skill, and hence one which adds considerably to the cost, is the setting of the feed bar and nib in the pen barrel.

10 In most fountain pens as at present constructed it is necessary to position the nib over the feed bar duct with a high degree of accuracy, since minor variations in the relative positions of these parts greatly affect the writing qualities of the pen. Furthermore, when the pen is disassembled for repair or cleaning, the repairman may not replace the nib and feed bar exactly in their initial relative positions, with the result that the writing qualities of the pen are impaired.

20 If the user of a fountain pen permits the feed bar to become badly clogged by the use of different kinds of ink, or inferior inks, he ordinarily finds it necessary to take the pen to a repair shop to have it cleaned, since the ordinary layman cannot remove the feed bar and nib and replace the same properly.

25 In the fountain pen construction of my invention, the feed bar and nib may be removed for cleaning and replaced very readily by the ordinary layman as well as the expert repairman. The factory operation of assembling the fountain pen nib and feed bar in the section is so simple that relatively inexperienced help may be employed for its performance.

35 With the fountain pen of my invention, it is unnecessary to carry a large assortment of complete fountain pens in stock, since the prospective purchaser of a pen may select the type of nib having the writing qualities which he desires, and the dealer may readily assemble the selected nib in any barrel which may be chosen.

40 I obtain all of these advantages by very slight changes in the construction of the nib, feed bar and section, the changes being so slight that the external appearance of the pen will appear to the casual observer to be of the usual standard construction.

45 In addition to the objects of my invention above set forth, it is an object of my invention to provide a fountain pen which is of simple construction, may be economically manufactured, and which will maintain its writing qualities even after it has been disassembled and reassembled by the user.

55 Other objects will appear from the following

description, reference being had to the accompanying drawings, in which

Figure 1 is a fragmentary sectional view of a fountain pen in which the improved feed bar and nib assembly of my invention is incorporated;

Figure 2 is an elevation of the nib and feed bar;

Figure 3 is an enlarged longitudinal sectional view taken on the line 3—3 of Figure 2;

Figure 4 is an enlarged transverse sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a perspective view of the nib;

Figure 6 is a fragmentary sectional view of a modified form of my invention;

Figure 7 is an elevation of the nib and feed bar;

Figures 8, 9 and 10 are transverse sectional views taken on the lines 8—8, 9—9 and 10—10, respectively, of Figure 6.

My invention may be utilized in any type of fountain pen, and for purposes of illustration is shown as incorporated in a sac type pen having a barrel 20, section 22 and sac 24 assembled in the usual manner. The section comprises a tubular end portion 26, to which the sac may be cemented, and a bore 28 to receive a feed bar 30.

The lower end of the bore 28 is conically flared at 32, the degree of this flare being slightly exaggerated in the drawings. The feed bar 30 has a cylindrical portion 34 which fits loosely in the bore 28, and a frusto-conical portion 36. Part of the frusto-conical portion and a part of the cylindrical portion are recessed to receive the nib 38. The feed bar is shaped so that when the nib is tightly pressed into the recess formed therein the outer surface of the cylindrical portion 40 and the tapered portion 42 of the nib will be flush with the corresponding surfaces 34 and 36 of the feed bar.

The feed bar has a pair of segmental slots 44 formed in the cylindrical portion 34, which are adapted to receive ears 46 bent inwardly at the 40 upper extremity of the nib. The feed bar has a transverse slot 47 formed therein adjacent the frusto-conical portion 36, this slot being provided for engagement by the blade of a pocket knife, a screw driver, coil, or similar instrumentality, for 45 withdrawing the feed bar and nib from the section. The feed bar is provided with the usual ink feed ducts 48 and air channel 50.

The nib, when not pressed into the recess in the feed bar, assumes the shape indicated in dotted 50 lines in Fig. 3, so that when it is properly assembled in the nib it assumes the shape shown in full lines in Fig. 3, with the portion of the nib which projects from the section tensioned so as resiliently to maintain snug contact with the feed bar. 55

It will be readily apparent that the fountain pen may be easily assembled by placing the nib in position on the feed bar, inserting these two parts in the section, and pressing them snugly in place.

5 The angular position of the feed bar relative to the section is immaterial, since the surface 32 of the section and the cooperating contacting surfaces of the feed bar and nib are surfaces of revolution about a common axis. It has been found that even after the fountain pen has been in use for a relatively extended period, the nib and feed bar may be removed very easily, probably due to the fact that whatever ink may be present between the feed bar and section is practically sealed against evaporation.

10 The modified form of my invention is illustrated in Figures 6 to 10 as incorporated in a fountain pen of conventional construction, as previously described. The pen section 60 has a bore 62 of diameter slightly greater than that of the cylindrical portion 64 of a feed bar 66, and an enlarged counter-bore 68.

15 An obturating sleeve 70 having a plurality of inwardly projecting annular flanges 72 fits snugly in the counter-bore 68 and may, if desired, be secured therein by a suitable adhesive cement. The obturating sleeve is preferably made of a relatively soft rubber, so that the flanges 72 will resiliently engage and seal against the feed bar 66 and nib 74 with which they are in contact. For this purpose, the openings in the annular flanges 20 72 are of slightly less diameter than the feed bar. Under ordinary circumstances, a single flange will be effective to prevent leakage of ink, but the greater number are preferably provided positively to insure against such leakage.

25 The lower end of the counter-bore 68 receives a flanged retainer ring 76 which preferably fits snugly therein, and is cemented to preclude accidental removal therefrom. The ring 76 has an exactly centered outwardly flaring opening 78 therein. The angle of the taper or flare of the wall of the opening 78 is relatively small, so that, as will hereinafter appear, the feed bar and nib may be tightly wedged therein.

30 The feed bar 66 is provided with a pair of recesses 80, segmental in cross-section, which are adapted to receive lugs or clips 82 bent rearwardly from the nib 74. The feed bar has a tapered protrusion 84, the surface of which is substantially complementary to that of the opening 78 in the ring 76. A notch 86 is formed adjacent the protrusion 84 for the reception of the end of a screw driver, knife blade, coin or other instrumentality, when it is desired to remove the feed bar. The feed bar is provided with the usual capillary ink ducts 88 and air duct 90.

35 In assembling the modified form of my invention shown in Figs. 6 to 10, inclusive, the nib is placed over the feed bar so that the lugs 82 fit snugly in the notches 80 formed in the feed bar. The parts may readily be made to sufficiently small tolerances to cause the nib to be very accurately located over the feed bar, in the act of thus attaching the nib to the feed bar. The nib and feed bar may then be forced into the pen section. The inner end of the feed bar fits relatively loosely in the bore 62. It is unnecessary to insert the pen and nib in any definite angular position relative to the section, since the opening 40 78 in the retainer ring 76 has a frusto-conical surface and the projection 84 will therefore contact with this surface equally well in any angular position.

45 The degree of taper of the projection 84 and

of the opening 78 is substantially the same, although in the preferred construction the angle of the tapered opening 78 is preferably slightly less than the angle of the conical surface of the projection 84. For example, the surface of the opening 78 may have an angle of four degrees relative to its axis, while the surface of the projection 84 has an angle of five degrees relative thereto. By making the angle slightly different in this manner, the clamping pressure exerted when the feed bar and nib are forced into the section is concentrated along a line adjacent the lower (Fig. 6) edge of the projection 84 and between the nib and the upper inner edge of the retaining ring 76. In this manner, the feed bar and nib are very firmly held in the section. At the same time, however, the nib and feed bar may be freely removed when the feed bar has been pulled only a very short distance from the position in which it is normally held. This construction is also preferably utilized in the preferred embodiment of my invention shown in Figs. 1 to 5, as partially illustrated in an exaggerated manner in Fig. 3. In the latter construction, however, the line of contact is substantially at the lower edge of the section.

5 In both embodiments, the upper end of the feed bar fits relatively freely in its complementary bore and the nib and feed bar are held in position substantially solely by the tight fit between the cooperating frusto-conical surfaces on the feed bar and on the retainer ring or section.

6 The sealing member or obturator 70, if made of a good quality rubber, will retain its elasticity for a long period of time and will throughout its life form an ink-tight seal about the feed bar and nib.

7 While I have shown and described particular embodiments of my invention, it will be apparent to those skilled in the art that various modifications in design and construction may be made without departing from the spirit of my invention.

8 What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a fountain pen, the combination of a barrel having a part with a feed bar receiving bore therein, a feed bar, a nib, cooperating means on said feed bar and nib for detachably securing said nib to said feed bar in a predetermined position relative thereto, and interengaging tapered wedging means on said part, on said nib, and on said feed bar for detachably securing said feed bar and nib in said part in any angular position.

2. In a fountain pen, the combination of a barrel having a part with a feed bar receiving opening therein, a feed bar having a pair of open segmental grooves formed therein, a unitary nib having a pair of projecting lugs shaped to fit snugly in said grooves thereby to facilitate attachment of said nib to said feed bar in a predetermined position and to permit easy detachment of said nib from said feed bar by relative lateral movement, and interengaging wedging means on said feed bar and said part whereby said nib and feed bar may be detachably secured in said part and said nib held against lateral movement relative to said feed bar and snugly against the surface thereof.

3. In a fountain pen, the combination of a barrel having a part provided with a feed bar receiving opening, a feed bar, a nib, interengaging means on said feed bar and nib for facilitating accurately detachably positioning one relative to the other, and cooperating wedging surfaces formed on said feed bar, on said nib, and on said part detachably to hold said feed bar, nib and part in assembled relation.

4. In a fountain pen, the combination of a barrel having a part provided with a feed bar receiving opening, a feed bar, a nib readily detachable, interengaging means on said feed bar and nib for facilitating accurately positioning one relative to the other, cooperating wedging surfaces formed on said feed bar and said part detachably to hold said feed bar, nib and part in assembled relation, and a flexible obturator having a plurality of sealing rings positioned between said feed bar and said part and forming an ink-tight seal therebetween.

5. In a fountain pen, the combination of a barrel with a feed bar receiving part, a rigid feed bar having an intermediate portion thereof tapered, a nib conformed to fit closely against the surface of said feed bar in a predetermined position relative thereto when firmly pressed thereagainst, said nib and feed bar being adapted to be detachably secured in said part by wedging contact of the tapered portions of said feed bar and of said nib in said part.

6. In a fountain pen, the combination of a barrel having a feed bar receiving part, a rigid feed bar having a frusto-conical surface, and a nib having a frusto-conical portion, the angle of the taper of said portion being slightly greater

than that of said surface whereby said nib will be slightly deformed when said nib and feed bar are forced into said part.

7. As an article of manufacture, a fountain pen nib having a writing point, a shank portion substantially semi-circular in cross-section, and a frusto-conically surfaced portion intermediate the shank and point, said latter portion flaring outwardly toward the point of the nib.

8. In a fountain pen, the combination of a barrel having a part with a feed bar receiving bore therein, a nib having a point portion and a tapered portion, a feed bar having ink ducts therein and provided with a tapered surface, the degree of taper of said surface being less than the degree of taper of the tapered portion of said nib, cooperating means on said nib and on said feed bar to predetermine the relative positions thereof, said feed bar and nib being insertable in the bore of said barrel part with their tapering portions in engagement with said barrel part at the outer end of the bore therein, thereby to hold said nib assembly on said feed bar and wedgingly to hold the assembly of said feed bar and nib tightly within said barrel part.

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