

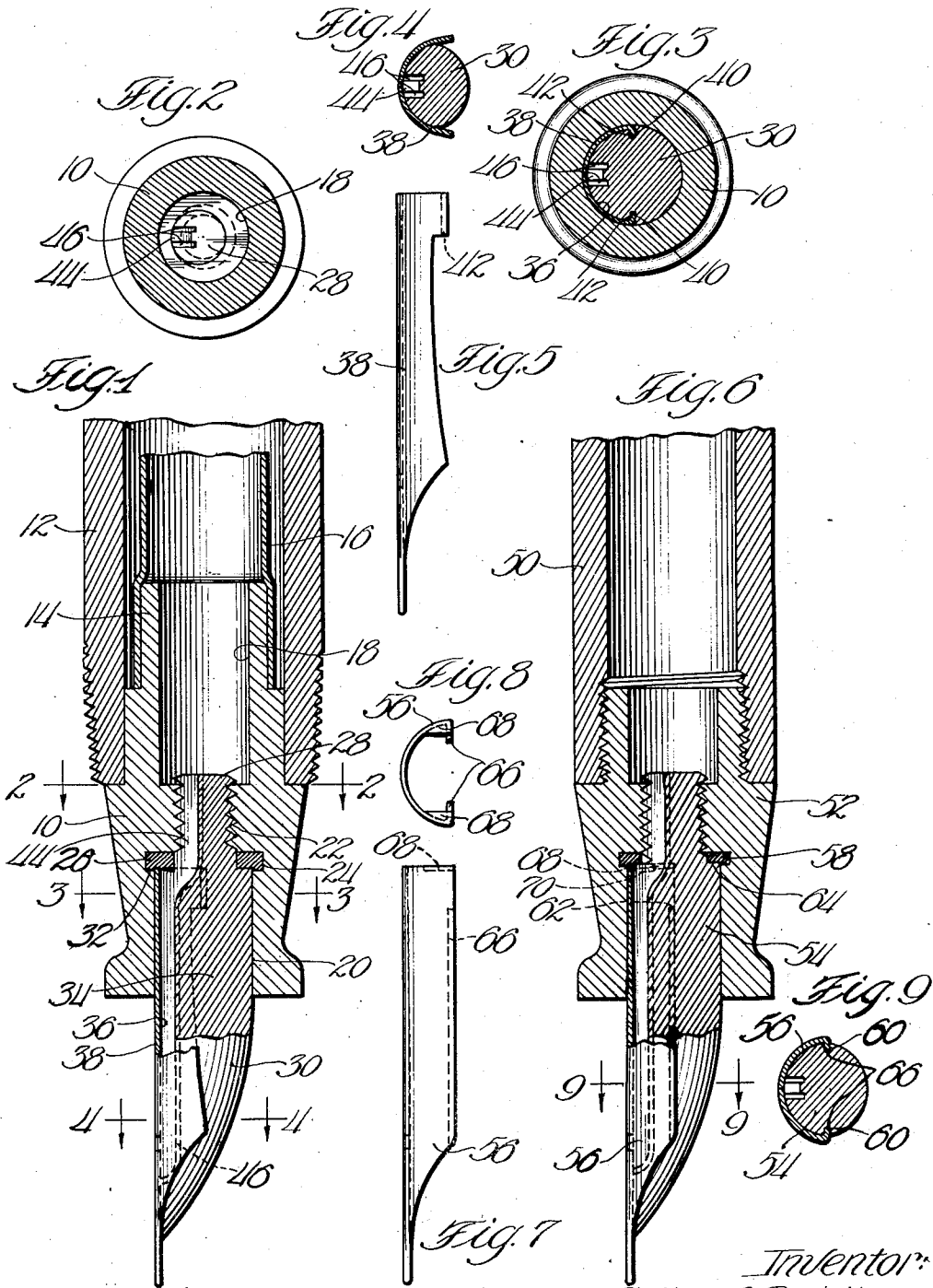
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FOUNTAIN PEN

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# UNITED STATES PATENT OFFICE

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## FOUNTAIN PEN

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My invention relates generally to fountain pens and more particularly to improvements in the feed bar construction and in the means for securing the pen point to the barrel.

In most fountain pens as at present manufactured, the pen point is secured to the section by wedging the feed bar and pen point into the bore of the section. This method has many disadvantages, among which may be enumerated the following: (1) The accurate positioning of the pen point relative to the feed bar and forcing the feed bar and pen point into the section is an operation requiring a high degree of skill and is a comparatively slow and costly operation, the workmen performing this operation being usually the highest paid workmen in a fountain pen factory. (2) Even though the pen point, feed bar and section are assembled by skilled workmen there is a high percentage of the pens rejected upon test due to improper position of the pen. (3) The pen point cannot be readily replaced—special tools are desirable to remove the pen point—and during the operation of removing and replacing the point it is frequently, sometimes irreparably, bent out of shape, split or broken. (4) The duct in the feed bar cannot, practically speaking, be thoroughly cleaned by the ordinary user, and as a consequence many pens are prematurely discarded for failure to write when the cause of the failure is merely the clogging of the ink duct in the feed bar.

It is, therefore, one of the primary objects of my invention to provide an improved pen point, feed bar and section assembly which, due to the provision of means for accurately positioning the pen point on the feed bar and detachably securing the feed bar and pen point to the section, overcomes the above and other disadvantages.

A further object is to provide an improved means for accurately positioning the pen point relative to the feed bar.

A further object is to provide a fountain pen in which improved means for securing the pen point to the barrel or section are provided whereby the pen points are readily interchangeable.

A further object is to provide improved

means for securing a pen point in a fountain pen, which may be economically manufactured, with which a lighter weight pen point may be used, which will not permit leakage of ink, which will feed properly, which may be easily cleaned and which will cause the pen to have improved writing qualities.

Other objects will appear from the following description, reference being had to the accompanying drawing, in which:

Fig. 1 is a fragmentary sectional end elevational view of the feed bar, section and pen point of a fountain pen;

Figs. 2, 3 and 4 are transverse sectional views taken on the lines 2—2, 3—3 and 4—4, respectively, of Fig. 1;

Fig. 5 is a side elevation of the pen point;

Fig. 6 is a view similar to Fig. 1 showing a modified form of my invention;

Fig. 7 is a side elevation of the pen point employed in the modified form;

Fig. 8 is a plan view of the pen point shown in Fig. 7; and

Fig. 9 is a transverse sectional view taken on the line 9—9 of Fig. 6.

Figs. 1 to 5 show my invention incorporated in the customary sac type of fountain pen in which a pen section 10 is fitted or screwed into the end of a barrel 12. The section has the usual tubular extension 14 to which the sac 16 is secured. The section has large bores 18 and 20 at its ends and an intermediate threaded bore 22 of smaller diameter. An annular recess 24 is formed at the inner end of the bore 20 to receive a gasket 26, of a compressible material such as leather or rubber.

The upper end 28 of the feed bar 30 is threaded in the portion 22 of the section and has a shoulder 32 abutting against the gasket or washer 26. The mid-portion 34 of the feed bar 30 is substantially cylindrical in shape. A recess 36 extends about halfway around the cylindrical portion 34 and is of sufficient depth to receive the upper end of a pen point 38 so that the outer surface of the latter will form a prolongation of the cylindrical surface of the feed bar. The feed bar has a pair of grooves 40 which extend downwardly for a short distance and receive lugs

42 bent inwardly from the upper end of point 38. The feed bar also has a longitudinal groove 44 which extends from the upper extremity of the feed bar to a point near its lower end, and comprises a pair of capillary ink ducts 46.

In the assembly of the pen the point is slid over the feed from the threaded end thereof and the lugs 42 are snugly engaged in the grooves 40, thereby positively causing accurate alignment of the point and the feed bar and at the same time fixing the longitudinal position of the point. The washer 26 having been forced into the recess 24, wherein it may be held solely by its tight fit or, in addition, by a suitable adhesive cement, the feed bar and point are inserted in the section and screwed into place. Although I prefer the construction illustrated, if desired, the gasket could be secured to the feed bar, and the recess 24 made sufficiently shallow to permit the gasket to be removed readily with the feed bar.

The external diameter of the assembled feed bar and pen point is slightly less than the diameter of the bore 20, there being preferably just sufficient clearance to permit the feed bar to be screwed in place easily, but insufficient to prevent the entrance of foreign matter. The gasket not only serves as a means to prevent leakage of ink around the feed bar but also functions as a resilient abutment so that the person assembling the parts will be able to feel when the feed bar has been screwed inwardly, and at the same time acts as a lock washer preventing accidental loosening and unscrewing of the feed bar.

It will be noted that the groove 44 extends entirely along the surface of the feed bar and is cut through the threads of portion 28. This is a very advantageous feature, since, upon disassembly of the parts, the groove and the capillary ink ducts 46 may be easily inspected and cleaned. Furthermore, the flow of ink or the "feed" will be reliably constant, and the threads will be lubricated by the ink as the feed bar is screwed into and removed from the section.

The modification shown in Figs. 6 to 9, inclusive, is designed for fountain pens of the type in which a sac is not used, although it may be used in sac type pens as well, and has several additional advantages not present in the previously described construction.

The pen comprises a barrel 50, section 52, feed bar 54, pen point 56 and washer 58, generally similar to the corresponding parts of the preferred embodiment. The pen point 56 is, however, fitted to the feed bar in a slightly different manner. The feed bar has a pair of longitudinal grooves 60 which extend from a point adjacent the lower end of the feed bar to the point 62 a short distance beneath the shoulder 64.

These grooves are provided to receive

flanges 66 bent inwardly from the point 56. The point also has inwardly bent flanges 68 at its inner or upper end, these flanges being seated in complementally shaped recesses 70 formed at the edge of the shoulder 64. By means of the cooperation of the flanges 66 in the grooves 60 and the flanges 68 in the recesses 70 the pen point is positively held against movement relative to the feed bar. Since the flanges 66 extend to within a short distance of the pointed end of the pen the upper portion of the pen point may be made of much thinner metal than is ordinarily required. The pen point is shown as gradually decreasing in thickness from a point slightly above the lower ends of the flanges 66 to its upper end. The upper portion of the point will thus be sufficiently resilient so that the flanges 68 will readily snap into and out of the recesses 70, when the feed bar and pen point are removed from the section. When these parts are in position in the section, the flanges 68 will, of course, be held in the recesses 70. Due to the fact that the major portion of the point may be made considerably thinner than is customary, the cost of the point is materially decreased.

The invention is capable of wide variation within equivalent limits and I contemplate such variation as may be desirable or useful in the particular adaptation of the invention shown, or in its adaptation to other devices. I do not restrict myself in any unessential particulars, but what I claim and desire to secure by Letters Patent is:

1. In a fountain pen having a barrel, a section secured to the barrel, said section having a pen point and feed bar receiving bore at its lower end, and a threaded bore of smaller diameter at its upper end, a rigid feed bar having air and ink ducts extending longitudinally along its surface, said bar having a threaded reduced diameter end portion screwed into said threaded bore in said section, and having a pen point receiving recess, cooperating means on said pen point and said feed bar for preventing downward longitudinal movement of the former relative to the latter, and a compressible washer secured in said section and arranged to seal the connections between said pen point and section, said feed bar and section and said pen point and feed bar.

2. In a fountain pen, the combination of a section having a cylindrical bore, and a threaded bore therein, a rigid feed bar having a substantially cylindrical portion fitting in said cylindrical bore and a threaded portion fitting in said threaded bore, a pen point fitting in a complemental recess formed in the cylindrical portion of said feed bar so that its outer surface forms a prolongation of the cylindrical surface of the feed bar, and a compressible gasket positioned between the end of the cylindrical portion of said

feed bar, the upper end of said pen point and the shoulder formed in said section at the juncture of the threaded bore and the cylindrical bore.

5 3. In a fountain pen, the combination of a rigid feed bar having a threaded end portion of reduced diameter and having an air and ink duct extending longitudinally entirely along the outer surface thereof, a pair  
10 of grooves extending downwardly from a point adjacent one end of said bar, a barrel having a threaded bore for receiving the threaded end of said feed bar, a metallic pen point fitting over said feed bar and hav-  
15 ing a pair of lugs fitting into said grooves, the inter-engagement of said lugs and the walls of said grooves causing accurate positioning of said pen point with respect to  
20 said feed bar, and permitting quick detachment of said pen point from said feed bar, and an annular gasket having an opening larger in diameter than said threaded portion of said feed bar but smaller than the remaining portion of said feed bar.

25 4. In a fountain pen, the combination of a barrel having a threaded bore adjacent one end thereof, and a counter-bore at said end, a feed bar having an end portion adapted to be screwed into said threaded bore and  
30 having a portion adapted to be received by said counter-bore, a pen point detachably secured to said feed bar, and a yieldable member interposed between said feed bar and said barrel to limit the distance which the  
35 former may be screwed into the latter.

5 5. In a fountain pen the combination of a barrel end portion having a threaded bore therein, a feed bar having a reduced diameter end portion threaded in said bore, a pen  
40 point cooperable with said feed bar, and a yielding gasket positioned between said feed bar and said barrel end portion to seal the connection there-between.

45 6. In a fountain pen, a feed bar having a longitudinal ink and air duct in the surface thereof, said duct having ink channels of capillary dimensions, and said feed bar having a pair of grooves extending longi-  
50 tudinally thereof, said grooves terminating short of the end of said bar, and a pen point having flanges fitting in said grooves, thereby accurately to position said pen over said ink and air duct, and detent means formed integrally with said pen point  
55 and engaging said feed bar detachably to secure said pen point to said feed bar in correct longitudinal position relative thereto.

60 7. In a fountain pen, the combination of a barrel having a threaded bore adjacent one end thereof, and a counter-bore at said end, a feed bar having an end portion screwed into said threaded bore and having a portion received by said counter-bore, a pen point,  
65 quick-detachable connecting means for attaching said pen point to said feed bar prior

to assembly in said barrel, and a yieldable member interposed between said feed bar and said barrel to limit the distance which the former may be screwed into the latter, said combination including means to prevent  
70 detachment of said feed bar and pen point when said elements are assembled in said barrel.

8. In a fountain pen, the combination of a barrel end portion having a threaded bore  
75 and a counter-bore, a feed bar having a reduced diameter end portion threaded in said bore and an ink feed duct extending longitudinally along the surface thereof, a pen point detachably secured to said feed bar,  
80 and a yielding gasket positioned between said feed bar and said barrel end portion to seal the connection there-between.

9. In a fountain pen the combination of a barrel end portion having a threaded bore  
85 and a counter-bore therein, a feed bar having a reduced diameter end portion threaded in said bore, a pen point cooperable with said feed bar, and a gasket positioned at the end of the counter-bore in said barrel end portion to seal the connection between said barrel end  
90 portion and said feed bar.

10. In a fountain pen the combination of a barrel having an end piece, a feed bar hav-  
95 ing an air and ink duct extending longitudinally along the surface thereof, a groove extending downwardly from a point adjacent one end of said bar, said feed bar being secured in said end piece, a metallic pen point fitting over said feed bar and having a lug fit-  
100 ting into said groove, the interengagement of said lug and the walls of said groove causing accurate positioning of said pen point with respect to said feed bar, and permitting quick detachment of said pen point from  
105 said feed bar, and unitary means to seal the end of said point, said feed bar, and said end piece each with respect to the other.

11. In a fountain pen, the combination of a barrel end portion having an internally  
110 threaded bore, a rigid feed bar threaded in said portion and having an ink feed duct formed on the surface thereof, a pen point detachably secured to said feed bar, cooperating means on said feed bar and pen point to maintain the latter in proper position relative to the duct in said feed bar, and a compressible washer for limiting the distance which said feed bar may be screwed into said section and forming a seal between said last  
115 named elements.

In witness whereof, I hereunto subscribe my name this 30th day of December, 1929.

ARTHUR O. DAHLBERG.