May 16, 1939. H. S. WRIGHT 2,158,615

FOUNTAIN PEN

Filed July 26, 1937 2 Sheets-Sheet 1

Fig. 1

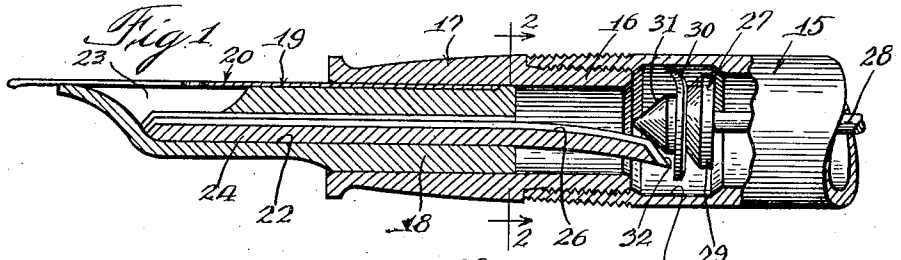


Fig. 2

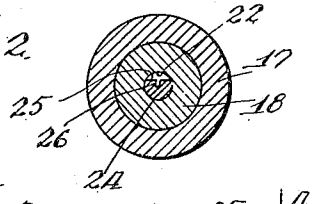


Fig. 3

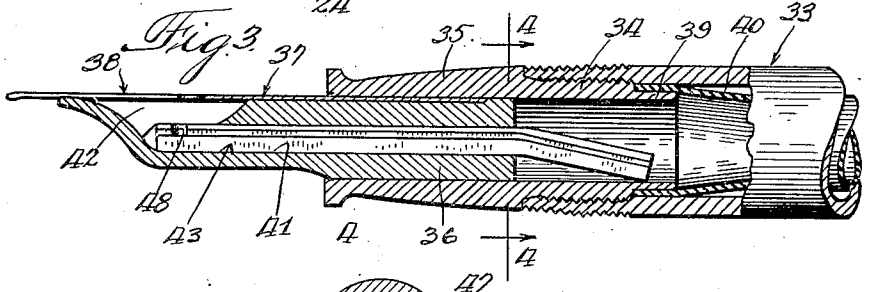


Fig. 4

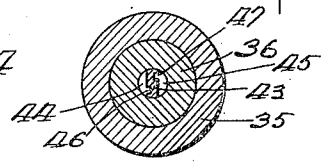


Fig. 5.

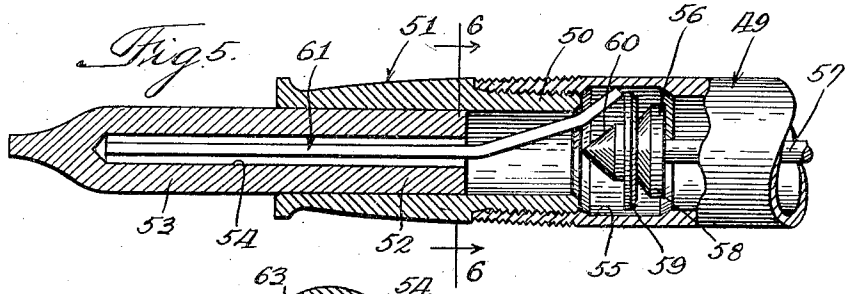
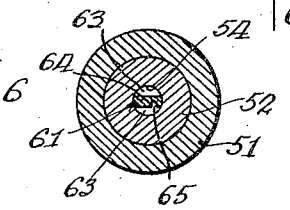


Fig. 6



Inventor:
Howard S. Wright
By Arnold, Thurman, Allen & Mecklenburger.
Attys.

May 16, 1939. H. S. WRIGHT 2,158,615

FOUNTAIN PEN

Filed July 26, 1937 2 Sheets-Sheet 2

Fig. 7.

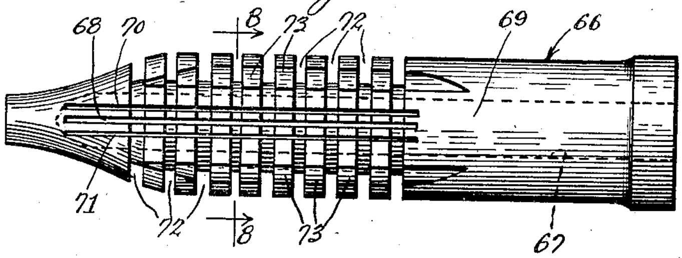


Fig. 8.

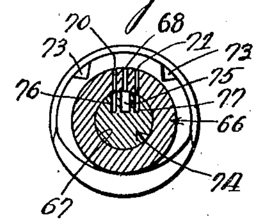


Fig. 9

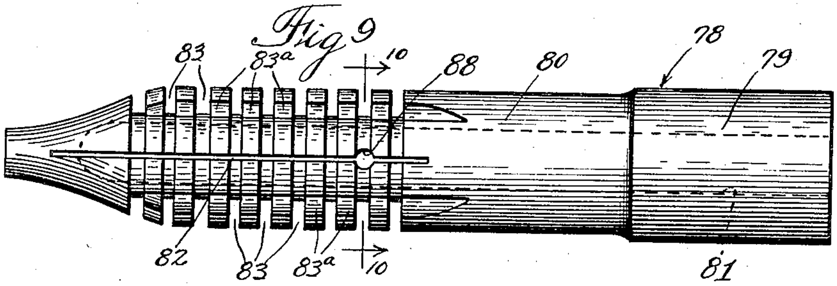


Fig. 10

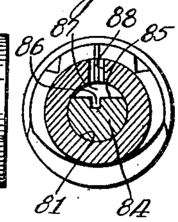


Fig. 11

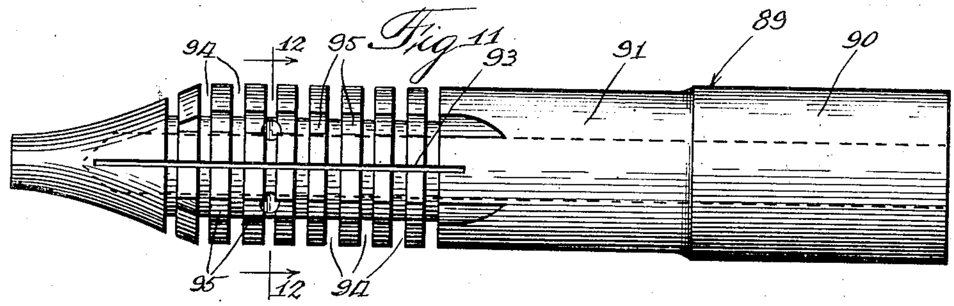
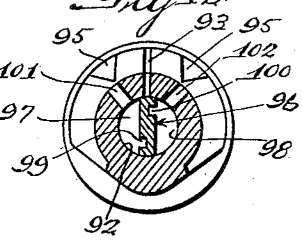


Fig. 12.



Inventor:
Howard S. Wright.
By: Ames, Thiess, Olson & Mecklenburger.
Attys.

Patented May 16, 1939 2,158,615

UNITED STATES PATENT OFFICE

2,158,615

FOUNTAIN PEN

Howard S. Wright, Fort Madison, Iowa, assignor to W. A. Sheaffer Pen Company, Fort Madison, Iowa, a corporation of Delaware

Application July 26, 1937, Serial No. 155,628

6 Claims. (Cl. 120—50)

This invention relates to a fountain pen and has special reference to a fountain pen having a novel writing fluid feeding mechanism for establishing a capillary channel from the pen nib rearwardly into the reservoir to draw writing fluid positively therefrom to feed the pen nib in writing.

More particularly this invention relates to a fountain pen including a feed bar having a shank portion adapted to be mounted within the end of the barrel thereof and an extending nib supporting portion with an internal longitudinally extending feed duct in the feed bar communicating at one end with the writing fluid reservoir of the barrel and at the other end with the surface of the supporting portion, there being an insert in the feed duct extending beyond the end of the feed bar into the writing fluid reservoir and having a passageway of capillary dimensions therein for positively feeding writing fluid from the reservoir to the pen nib on the nib supporting portion.

While the writing fluid feeding mechanism of the present invention is adaptable to writing instruments of all types, it is particularly desirable for use with pens of the type commonly known as one-stroke pump fillers which are filled with writing fluid by the actuation of a plunger rod and plunger assembly to cause a partial vacuum to be formed in the writing fluid reservoir in the rear of the piston as the plunger rod and plunger move forwardly toward the writing point end. In such types of writing instruments the bore of the barrel is usually enlarged at the forward end so that the plunger, upon reaching its limit of forward movement, enters the enlarged portion whereupon the partial vacuum created in the rear of the plunger, assuming that the writing point end of the pen is immersed in writing fluid, breaks the vacuum and causes writing fluid to be drawn through the feeding mechanism past the plunger into the writing fluid reservoir.

As above stated, a continuous capillary channel is established by the use of the present feeding mechanism from the pen nib beyond the feed bar into the writing fluid reservoir. In that class of pens above referred to as one-stroke pump fillers, a continuous capillary channel is established from the nib back to the plunger assembly to contact the writing fluid adjacent the plunger and assure a positive feed of writing fluid from the reservoir around the plunger to the pen nib.

It is also desirable in one-stroke pump fillers to prevent the possibility of writing fluid becoming trapped within the reservoir at the plunger assembly when the pen is in use in writing and the plunger assembly is disposed within the enlarged portion of the bore of the barrel. In the enlarged bore of the barrel the outer periphery of the enlarged portion of the plunger, which, for example, comprises a flexible disc disposed between a backing member and a locking nut, is spaced but a short distance from the inner wall of the enlarged bore in which the plunger lies when in a position of use and the greater portion of the writing fluid in the reservoir lies above this plunger.

When the writing fluid below the plunger in the ink feeding mechanism becomes exhausted in writing, a trapping of the liquid at the plunger ofttimes occurs. Ordinarily, should the plunger assembly be held rigidly, the pen must be shaken to break the air bubble causing the trapping of the writing fluid to permit the fluid to pass around the plunger. This condition of trapping becomes more acute as the quantity of writing fluid in the reservoir above the plunger becomes less in volume because the partial vacuum created in the reservoir above the level of the writing fluid is greater, coupled with the fact that the space is smaller between the outer periphery of the flexible disc and the inner wall of the enlarged bore.

Applicant is aware of instances wherein this condition was sought to be remedied by the provision of a plunger pivotally mounted instead of rigidly held with the object in view of obtaining a force necessary to break the air bubble furnished on the pivotally mounted plunger by the weight of the writing fluid in the barrel above the plunger assisted by the slight jarring incident to the use of the pen in writing.

In the present invention, trapping is avoided entirely because the distance between the flexible disc or enlarged portion of the plunger and the side wall of the bore is ordinarily great enough to prevent the formation of an air bubble or film by the positive forcing of the plunger to one side in the reservoir. In the use of a pivotally mounted plunger such force as is obtained on the plunger is not positive and does not prevent the formation of air bubbles and seeks to break down the air bubble or film after they are formed depending upon the jarring employed in writing and the weight of the fluid in the reservoir thereabove.

As above stated, the feed bar has an internal longitudinally extending feed duct having an insert therein with a passageway of capillary di-

mensions extending beyond the end of the feed bar into the writing fluid reservoir within the enlarged bore and terminating adjacent the side wall thereof to contact the writing fluid adjacent the plunger. In some instances of use, instead of the end of the insert being directed to one side adjacent the side wall of the enlarged bore, it may be desirable for the insert to engage the plunger and to move the same to one side in the enlarged bore to widen the space between one side of the periphery of the flexible disc of the plunger and the adjacent side wall of the enlarged bore to prevent the formation of air bubbles and thus eliminate trapping of the writing fluid in the reservoir.

The movement of the plunger assembly to one side of the enlarged bore of the reservoir accelerates the flow of writing fluid around the plunger assembly in both directions of flow, that is, to and from the reservoir. Holding the plunger assembly to one side of the enlarged bore prevents "stopping" of the writing fluid from continuous flow or "skipping" when the pen is in use in writing. This disposition of the plunger assembly also permits fluid to return to the reservoir when disposed in a carrying position, that is, when the writing point end is held in a direction upwardly as in a pocket to avoid leaking around the pen section and in the cap where ordinarily fluid is trapped between the plunger assembly and the pen nib.

This invention is likewise concerned with the structural detail of the feed bar and particularly the writing fluid channels thereof with which the insert is directly associated to direct writing fluid from the reservoir to the distributing channels.

Other objects and advantages will hereinafter be more particularly pointed out and for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawings, in which latter:

Figure 1 is a central sectional view of a fragmentary portion of a fountain pen embodying the features of this invention, a portion of the barrel being shown in elevation;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1 showing a modified form of feeding mechanism embodying the features of this invention;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 1 showing a further modified form of feeding mechanism embodying the features of this invention;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a top plan view of a feeding bar embodying the features of this invention;

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 7;

Fig. 9 is a view similar to Fig. 7 showing a modified form of feed bar embodying the features of this invention;

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 9;

Fig. 11 is a view similar to Fig. 7 showing still a further modified form of feed bar embodying the features of this invention; and

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 11.

Referring now to the drawings, and more particularly to Figs. 1 and 2 thereof, the fountain pen incorporating the features of this invention comprises a barrel 15 having a reduced extension 16 of the feed section 17 threadedly engaging the bore of the barrel at one end thereof, the feed section in turn having a shank portion 18 of a feed bar engaging the bore at the outer end of the feed section and extending therebeyond in the usual manner to provide an extending nib supporting portion 19. A pen nib 20 is disposed on the nib supporting surface 19 of the feed bar and extends into the feed section a short distance to be held in position therein between the bore thereof and the nib supporting surface of the feed bar preferably by a frictional fit.

The shank 18 of the feed section terminates within the bore of the feed section 17 preferably at a substantial distance from the end thereof, the reduced extension 16 of the feed section terminating at an enlarged bore portion 21 of the barrel 15. The enlarged bore portion 21 is a continuation of the bore of the barrel 15 serving as a writing fluid reservoir for the fountain pen.

The feed bar is provided with an internal longitudinally extending feed duct 22 communicating at one end with the writing fluid reservoir and at the other end with a fissure 23 extending from the nib supporting portion 19. The longitudinally extending feed duct 22 is preferably of circular cross section throughout its length.

An insert 24 is disposed in the longitudinally extending feed duct 22 and is likewise of circular cross section, one end of the insert terminating adjacent the writing point end of the feed duct and extending at the other end beyond the end of the feed bar into the writing fluid reservoir. The insert is preferably provided with a flattened portion 25, the flattened portion having a passageway 26 in the form of a fissure of capillary dimensions thereon for feeding writing fluid from the reservoir to the fissure 23 and thence to the pen nib 20. By reason of the insert being flattened, an air duct is provided between the flattened peripheral portion of the insert and the rounded peripheral portion of the feed duct 22 adjacent thereto.

In this instance of the present invention, the portion of the insert extending into the writing fluid reservoir engages a plunger assembly 27 for moving the plunger to one side in the enlarged bore 21 for accelerating the passageway of air and writing fluid around the plunger in either direction.

A plunger assembly preferably comprises a plunger rod 28 extending through the barrel substantially coaxially therewith and is operated in the usual manner by an operating button or the like on one end thereof accessible from the outside of the barrel to be grasped by the fingers in reciprocating the same in a longitudinal direction. The other end of the plunger rod 28 is provided with a backing plate 29 which is fixed thereto in any desirable manner for supporting a flexible washer 30, the washer being held in a position adjacent the backing plate 29 by a locking nut 31. The locking nut 31 is preferably of substantially conical shape and is disposed coaxially with the flexible washer 30 and backing member 29 on the plunger rod 28.

The end of the insert 24 extending into the writing fluid reservoir is preferably tapered as at 32 to conform substantially to the periphery of the conical shaped locking member 31 of the plunger assembly. When it is desired to fill the pen the plunger rod 28 and therewith the plunger assembly 27 is moved in a direction rearwardly or away from the writing point end to the limit of

its movement in that direction, and thereafter forwardly, creating a partial vacuum in the reservoir behind the plunger assembly to the position shown in Fig. 1 wherein the conical shaped locking nut 31 engages the tapered end 32 of the insert 24 and the plunger assembly is forced to one side in the enlarged bore 21 of the writing fluid reservoir.

When the plunger assembly is moved away from the insert 24, the insert occupies a position substantially coaxially throughout its length with the shank 18 of the feed bar and the internal longitudinally extending feed duct 22. By reason of its being preferably formed of hard rubber, the end of the insert bends slightly from the pressure of the plunger assembly thereon as the latter is moved to one side in the enlarged bore 21. It will be noted that the fissure or passageway 23 is continued throughout the length of the insert including the tapered end 32 so that a continuous capillary channel is formed from the plunger assembly to feed writing fluid positively to the pen nib 20 from the fluid reservoir.

It will also be observed that the space between the peripheral edge of the flexible disc 30 and the enlarged bore 21 at one side thereof is substantially great to prevent trapping of fluid behind the plunger assembly and thereby prevent skipping of the pen when in use in writing. The flow of writing fluid is accelerated around the plunger assembly in both directions of flow to and from the reservoir and writing fluid is positively fed by capillary attraction from the writing fluid reservoir directly to the pen nib, the fissure 23 being likewise preferably of capillary dimension.

Referring now more particularly to Figs. 3 and 4 of the drawings, the fountain pen therein shown, incorporating the features of this invention, comprises a barrel 33 having a reduced extension 34 of the feed section 35 threadedly engaging the bore of the open end thereof, the feed section in turn having a shank portion 36 of a feed bar engaging the bore at the outer end of the feed section and extending therebeyond in the usual manner to provide an extending nib supporting portion 37. A pen nib 38 is disposed on the nib supporting surface 37 and extends into the feed section a short distance to be held in position therein between the bore thereof and the nib supporting surface of the feed bar by a frictional fit.

The reduced extension 34 of the feed section 35 is provided with a further reduced extension 39 to accommodate a flexible sack 40. The flexible sack forms the writing fluid reservoir together with that portion of the bore of the feed section not engaged by the shank 36 of the feed bar.

The feed bar is provided with an internal longitudinally extending feed duct 41 preferably of circular cross section communicating at one end with the reservoir and terminating near the other end of the feed bar and being enclosed. A central longitudinally extending fissure 42 is cut into the nib supporting surface and communicates with the feed duct 41 adjacent its outer enclosed end thereof.

An insert 43 of preferably rectangular cross section is disposed in the central longitudinally extending feed duct 41, the greater width of the insert being of substantially the same diameter as the diameter of the feed duct 41 and extending in a vertical direction or in the direction of the fissure 42, and the narrower width of the insert being substantially less than the diameter of the feed duct 41 providing air passageways 44 and 45 on opposite sides thereof. Writing fluid passageways are also provided in the insert in the form of fissures 46 and 47 preferably cut on opposite sides of the insert.

The insert 43 extends beyond the end of the feed bar into the writing fluid reservoir, the end of the insert being preferably bent to one side to lie adjacent the wall of the writing fluid reservoir. The other end of the insert is preferably provided with a notch 48 which is cut across the full width thereof to augment the entry of air to the air channels 44 and 45.

The construction just described, as disclosed in Fig. 3 and Fig. 4 of the drawings, establishes a continuous capillary channel from the writing fluid reservoir proper to the pen nib and acts to positively feed writing fluid from the reservoir.

Referring now more particularly to Figs. 5 and 6 of the drawings, a fountain pen incorporating the features of this invention is therein shown as comprising a barrel 49 having a reduced extension 50 of the feed section 51 threadedly engaging the bore at the open end thereof, the feed section, in turn, having a shank portion 52 of a feed bar engaging the bore at the other open end of the feed section and extending therebeyond in the usual manner to provide a nib supporting portion 53. A pen nib may be disposed on the nib supporting surface of the portion 53 to extend into the feed section and be held in position therein between the bore thereof and the nib supporting surface of the feed bar by a frictional fit.

The feed bar is provided with an internal longitudinally extending feed duct 54 communicating at one end with the writing fluid reservoir of the barrel 49, the other end of the feed duct terminating near the outer end of the feed bar and being enclosed.

The end of the reduced extension 50 of the feed section 51 terminates adjacent to an enlarged bore portion 55 of the writing fluid reservoir of the barrel 49. The enlarged bore portion 55 receives a plunger assembly 56 when the fountain pen is in a normal condition of use, the plunger 56 being mounted on the end of a plunger rod 57.

The plunger assembly and plunger rod are for the purpose of filling the fountain pen with writing fluid, one end of the plunger rod 57 extending preferably through a packing gland at the end of the barrel opposite to that of the writing point end for receiving an operating head or button which is clasped by the fingers to reciprocate the plunger rod. The plunger assembly 56 may preferably comprise a backing member 58 suitably secured thereto and a flexible disc 59 held in a position thereagainst by a lock nut 60.

In filling the fountain pen reservoir with a writing fluid, the plunger rod 57 is moved outwardly of the barrel carrying therewith the plunger assembly 56 to the limit of its movement in that direction, whereafter it is returned in a direction toward its normal position creating a partial vacuum behind the plunger which is broken when the plunger assembly is received in the enlarged bore portion 55 of the reservoir. The plunger assembly and operation thereof is the same as that previously described in the embodiment shown in Figs. 1 and 2.

As the partial vacuum is broken and assuming that the writing point end of the fountain pen is immersed in the fluid, the writing fluid is drawn into the reservoir to fill the same. During the travel of the plunger assembly through the bore of the barrel, the flexible disc 59 engages the side walls thereof to create the above noted partial vacuum and when the plunger assembly is in the enlarged bore portion 55 of the reservoir, the periphery of the flexible disc 59 clears the side walls thereof and stands spaced apart therefrom so that the writing fluid from the reservoir may pass therearound to the feeding mechanism.

In order to establish a continuous capillary channel from the reservoir to the pen nib, an insert 61 is disposed in the longitudinally extending feed duct 54 and extends from the closed end thereof beyond the end of the feed bar into the writing fluid reservoir terminating adjacent the plunger assembly when the fountain pen is in normal condition for writing. Preferably, the end of the insert extending from the feed bar is bent toward one side of the barrel and terminates immediately above the flexible disc so that the insert is in actual physical contact with the fluid in substantially the plane of the flexible disc.

The longitudinally extending feed duct 54 is preferably of circular cross section and the insert 61 is preferably of rectangular cross section with the dimension of the greatest width approximately the same as the diameter of the duct. The smaller dimension of the insert is substantially less than that of the diameter of the duct providing air passageways 62 and 63 on opposite sides of the insert. The insert is also provided with writing fluid passageways 64 and 65 in the form of fissures of capillary dimensions preferably disposed on opposite sides of the insert to direct the writing fluid from the reservoir of the barrel 49 through the feed duct 54 to the pen nib. A continuous capillary channel may thus be provided from adjacent the flexible disc 59 to the pen nib to draw the writing fluid from the reservoir past the flexible disc and feed the same positively into the feeding mechanism and to the pen nib.

Referring now more particularly to Figs. 7 and 8 of the drawings, a feed bar 66 is shown as comprising an elongated body portion having an axially disposed longitudinally extending internal feed duct 67 for communication at one end with a writing fluid reservoir either in the form of a sack or a barrel proper and terminating near the other end of the feed bar and being enclosed. A central longitudinally extending fissure 68 is cut into the nib supporting surface 69 and communicates with the feed duct 67. Fissures 70 and 71 are disposed on either side of, and are spaced from, the central longitudinally extending fissure 68, all of the fissures extending preferably over a major portion of the length of the nib supporting surface.

The outer fissures 70 and 71 are preferably substantially smaller than the central fissure 68 and in a normal condition of use, the outer fissures continuously retain writing fluid while the center fissure remains free from writing fluid to act as an air inlet.

The longitudinally extending fissures 68, 70 and 71 communicate with a plurality of spaced transversely extending combs 72, the combs being preferably of uniform width and depth and being disposed on the nib supporting surface to extend substantially the length of the fissures. These combs are for the purpose of accommodating writing fluid expansion for the fluid reservoir and are filled with writing fluid by the fissures when more writing fluid than is necessary for actual writing is brought down from the reservoir. The combs 72, in turn, communicate with scoops 73 extending longitudinally of the feed bar or in the direction of the fissures but are not connected directly with the fissures.

The feed duct 67 is preferably provided with an insert 74 which may extend the full length of the feed duct and as in the previously described figures may extend therebeyond to terminate within the writing fluid reservoir. The insert 74 is provided with a central longitudinally extending fissure 75 for registration with fissure 68 of the feed bar 66 and is also provided with spaced longitudinally extending fissures 76 and 77 for registration respectively with the fissures 70 and 71 of the feed bar. However, the fissures of the insert 74 are preferably greater in width than the corresponding or registering fissures of the feed bar. For purposes of illustration the central fissure 68 of the feed bar may be approximately .010'' while the adjacent fissures 70 and 71 may be .007''. In this instance, the central fissure 75 of the insert may be .020'' while the adjacent fissures 76 and 77 may be .015''.

The construction above recited with reference to Figs. 7 and 8 is more effective on fountain pens employing a flexible pen in that the supply of writing fluid to the flexible nib is more constant. In the usual constructions employing a single central fissure employed to supply the fluid reservoir with air and to permit the fluid to flow to the nib, the fluid was normally fed in pulsations and the fissure would become practically empty of writing fluid at intervals. In such a condition, in connection with a flexible pen nib and particularly pen nibs of large size, the pulsating feed of fluid would result in skipping when employed in writing. In other words, by using the same fissure for permitting entrance of air and the exit of fluid, the entering air would stop at intervals the flow of writing fluid fed to the nib resulting in an irregular feed, so that at periodic intervals no fluid would be available in writing.

The object of providing fissures on each side of a central fissure, the central fissure being larger, is to permit the passage of air through the central fissure even though it contain writing fluid while the smaller fissures would retain writing fluid for constant supply to the pen nib because there is a stronger capillary control in the smaller fissures. The pen nib in this instance prevents an undue supply of writing fluid at such times as when excess pressure is applied to the flexible nib.

Referring now more particularly to Figs. 9 and 10, the feed bar 78 is shown as comprising an elongated body portion having a shank 79 for insertion into the bore of the barrel of the fountain pen with a nib engaging portion 80, a portion of which extends beyond the end of the barrel for supporting the pen nib. The feed bar is provided with an internal longitudinally extending feed duct 81 communicating at one end with the reservoir of the barrel which may either be in the form of a flexible sack or the bore of the barrel proper. A central longitudinally extending fissure 82 is cut into the nib supporting surface 80 and communicates with the feed duct 81, the fissure extending longitudinally preferably over a major portion of the nib supporting surface 80.

The central longitudinally extending fissure 82

communicates with a plurality of spaced transversely extending combs 83 which combs are preferably of uniform width and depth and are disposed on the nib supporting surface to extend substantially the length of the fissure 82. These combs are for the purpose of accommodating writing fluid expansion from the reservoir and communicate with scoops 83a extending longitudinally in a spaced relation with the fissure 82.

An insert 84 may preferably be disposed in the feed duct 81, the feed duct and insert being preferably of circular cross section with the insert having a flattened portion 85 and a passageway 86 in the form of a fissure extending longitudinally over the flattened portion of the insert. By reason of the fact that the insert is flattened, an air passageway 87 is provided between the flattened portion and the adjacent side wall of the feed duct, the writing fluid from the reservoir passing outwardly from the reservoir through the fissure or passageway 86 in the insert and air replacing the fluid in the reservoir through the air duct 87.

When the fountain pen is initially picked up from a desk or taken from the pocket of a user, the temperature within the writing fluid reservoir may normally be around room temperature, more or less, depending upon the place of storage. The heat of the hand will naturally raise the temperature within the sack and create an expansion of the air within the reservoir of the pen so that the amount of writing fluid conducted through the feed ducts 67 or 81 to the fissures may be more than is required for ordinary use in writing. Therefore, the excess of writing fluid is directed by the fissures into the laterally extending combs and the communicating longitudinally extending scoops depending, of course, upon the amount of writing fluid displaced from the sack.

The excess amount of writing fluid carried in the fissures and in the combs and scoops is fed to the slot or channel of the pen nib as required for writing and should the fountain pen be used continuously for a substantial period of time such writing fluid as is necessary will be drawn from the scoops and ducts until they have been exhausted, whereafter further writing fluid must be drawn from the reservoir and the reservoir must necessarily be furnished with air to replace the fluid drawn therefrom. Air, therefore, must be readily available to replace writing fluid in the reservoir without interruption of the facility for writing.

In the instance of Figs. 7 and 8, as I have previously described, the central fissure 68 provides for the entrance of air since it is wider than the adjacent fissures 70 and 71 and has less capillary attraction. In the instance of Figs. 9 and 10, a single fissure is employed, but preferably near the end of the fissure in the direction of the reservoir, a hole 88 of substantially greater diameter than the width of the fissure intersects the fissure and communicates with the air passageway 87 between the flattened portion of the insert and the adjacent side wall of the bore.

The fissure 82 of capillary dimension, for example, in practical use, approximately .010", has the hole 88 intersecting therewith approximately twice the width of the fissure and a hole of .025" has been found to be very satisfactory. In this construction air is permitted to enter as freely as is desired and, in effect, is substantially the same as the construction previously described.

Referring now more particularly to Figs. 11 and 12 of the drawings, a feed bar is shown therein comprising an elongated body portion 89 having a shank portion 90 for insertion into the bore at the open end of the barrel and a nib supporting portion 91 extending in part outwardly therefrom.

The feed bar 89 is provided with an internal longitudinally extending feed duct 92 communicating at one end with the writing fluid reservoir in the barrel which may be in the form of a flexible sack or the barrel proper. A central longitudinally extending fissure 93 is cut into the nib supporting surface 91 and communicates with the feed duct 92.

The central longitudinally extending fissure 93 communicates with a plurality of spaced transversely extending combs 94, the combs being preferably of uniform width and depth and being disposed on the nib supporting surface to extend over substantially the length of the fissure 93. The combs are for the purpose of accommodating writing fluid expansion from the reservoir and are augmented when necessary in this function by longitudinally extending scoops 95 with which the combs communicate.

An insert 96 is disposed in the longitudinally extending feed duct 92 and extends substantially the full length thereof and may preferably extend beyond the end of the feed bar into the writing fluid reservoir. The feed duct 92 is preferably of circular cross section and the insert is preferably of rectangular cross section, the greatest width of the insert being approximately the same as the diameter of the feed duct 92 and the lesser width being substantially smaller than the diameter of the feed duct to provide air passages 97 and 98. The insert is also provided with passageways 99 and 100 in the form of fissures of capillary dimensions cut into opposed surfaces of the insert and extending longitudinally the full length thereof.

As shown in the drawings, the insert 96 shuts off in part the fissure 93 for communication with the feed duct 92 excepting at the forward end thereof and the fissure 93 therefor over its rearwardly extending portion has merely the function of providing the combs and scoops with writing fluid which is in excess of that needed for use in writing. The forward end of the fissure serves its normal purpose in supplying the nib with writing fluid and a central longitudinal section thereof will appear with reference to Fig. 3 of the drawings.

In order that the supply of fluid to the writing point end and air to the reservoir be constant, two air holes 101 and 102 in this instance are provided which lead directly from one of the comb cuts and communicate with the air passages 97 and 98 respectively. The effect of the feed bar of the present embodiment containing the two air holes communicating with oppositely disposed air ducts is substantially the same as that of the embodiment shown in Figs. 9 and 10 where a single air channel is shown with a single hole.

While several embodiments of this invention are herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A fountain pen including a feed bar having a shank portion adapted to be mounted within

the end of the barrel thereof and an extending nib supporting portion, an internal longitudinally extending feed duct of circular cross section communicating at one end with the writing fluid reservoir of the barrel, a fissure extending over a portion of the nib supporting portion and communicating with said feed duct, and an insert of substantially rectangular cross section in said feed duct, dividing said duct into air passages on opposite sides along the greater width of said insert with the narrow sides of said insert engaging the wall bounding said duct and sealing said fissure of said nib supporting portion, said insert having writing fluid channels on said sides of greater width and a notch across the narrow sides thereof communicating between said writing fluid channels and said fissure.

2. A fountain pen including a writing fluid reservoir in a barrel having an enlarged bore for receiving a plunger in normal position of use, the plunger having a flexible disc with a reduced substantially rigid portion extending axially therefrom, a feed bar having a shank portion adapted to be mounted within the end of the barrel and an extending nib supporting portion, an internal longitudinally extending feed duct communicating at one end with the writing fluid reservoir and at the other end with the nib of said nib supporting portion, and an insert in said feed duct extending beyond the end of said feed bar into said writing fluid reservoir, said insert engaging the reduced extension of said plunger and moving the latter to one side in said enlarged bore to accelerate passage of air and writing fluid around said plunger in either direction.

3. A fountain pen including a writing fluid reservoir in a barrel having an enlarged bore for receiving a plunger in normal position of use, the plunger having a flexible disc with a reduced substantially rigid portion of conical shape extending axially therefrom, a feed bar having a shank portion adapted to be mounted within the end of the barrel and an extending nib supporting portion, an internal longitudinally extending feed duct communicating at one end with the writing fluid reservoir and at the other end with the nib of said nib supporting portion, and an insert in said feed duct extending beyond the end of said feed bar into said writing fluid reservoir, said insert having a tapered end engaging the conical-shaped rigid portion of said plunger for moving the latter to one side in said enlarged bore to accelerate passage of air and writing fluid around said plunger in either direction.

4. A fountain pen including a feed bar having a shank portion adapted to be mounted within the end of the barrel thereof and an extending nib supporting portion, an internal longitudinally extending feed duct or circular cross section communicating at one end with the writing fluid reservoir of the barrel, a fissure extending over a portion of the nib supporting portion and communicating with said feed duct, said feed bar having a hole on each side of said fissure communicating between said nib supporting surface and said feed duct, and an insert of substantially rectangular cross section in said feed duct for providing air ducts on each side of said insert, one of said holes communicating with one of said air ducts and the other of said holes communicating with the other of said air ducts.

5. A fountain pen including a feed bar having a shank portion adapted to be mounted within the end of the barrel thereof and an extending nib supporting portion, an internal longitudinally extending feed duct communicating at one end with the writing fluid reservoir of the barrel, a central fissure extending over a portion of the nib supporting portion and communicating with said feed duct, a fissure of smaller width than said central fissure extending on each side thereof in a spaced relation, and an insert in said feed duct, said insert having passageways of capillary dimensions therein in registration and in communication with said fissures for feeding writing fluid from said reservoir to the nib of said nib supporting portion.

6. A fountain pen including a feed bar having a shank portion adapted to be mounted within the end of the barrel thereof and an extending nib supporting portion, an internal longitudinally extending feed duct communicating at one end with the writing fluid reservoir of the barrel, a central fissure extending over a portion of the nib supporting portion and communicating with said feed duct, a fissure of smaller width than said central fissure extending on each side thereof in a spaced relation, and an insert in said feed duct having a central longitudinally extending groove in the upper surface thereof for registration and communication with said central fissure and a spaced groove on each side of said central groove for registration and communication with said spaced fissures, said central groove being of greater width than said central fissure and also being of greater width than said spaced grooves and said spaced grooves being greater in width than said spaced fissures.

HOWARD S. WRIGHT.