Jan. 4, 1938. W. R. CUTHBERT 2,104,638

FOUNTAIN PEN

Filed May 18, 1936

Fig. 1.

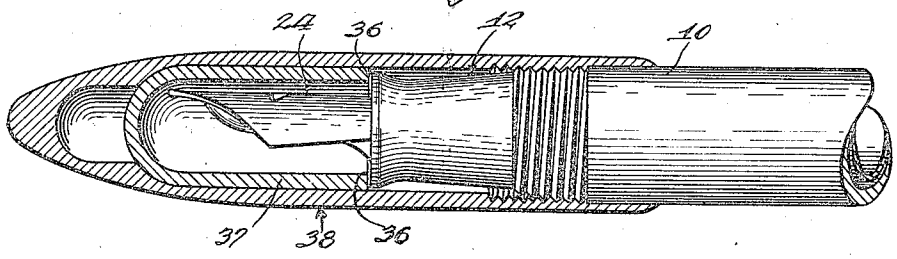


Fig. 2.

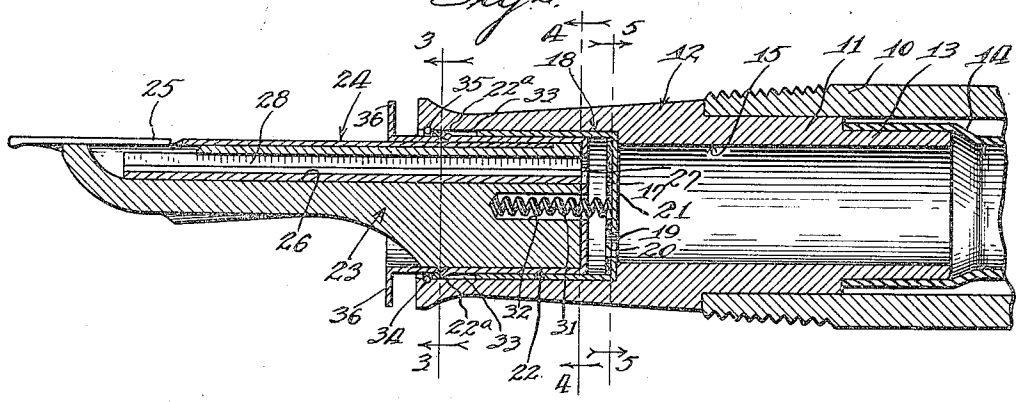


Fig. 3.

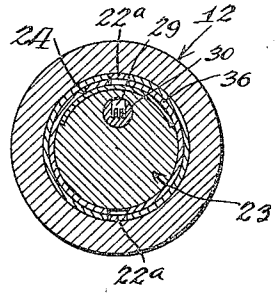


Fig. 4.

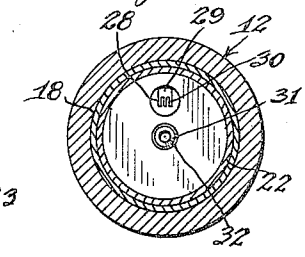
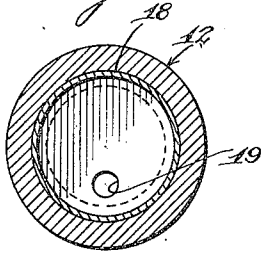


Fig. 5.



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UNITED STATES PATENT OFFICE

2,104,638

FOUNTAIN PEN

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Application May 18, 1936, Serial No. 80,226

7 Claims. (Cl. 120—48)

This invention relates to a fountain pen and has special reference to a fountain pen having a writing fluid feeding mechanism including means for regulating the flow of the writing fluid to the pen nib thereof when the fountain pen is in condition for use and for sealing the writing fluid within the reservoir when the cap is on the writing point end of the barrel and the fountain pen not in use.

More particularly, this invention relates to a fountain pen including a cap for enclosing the writing point end of the barrel in which the feed bar has a longitudinally slidable movement in the bore of the barrel and a passage for conducting writing fluid from the reservoir in the barrel to a pen nib mounted on the feed bar, there being an apertured seat in the barrel against which the end of the feed bar engages in a retracted position thereof, with automatic means for moving the slidable feed bar to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to the passage. When the cap is disposed on the barrel, the slidable feed bar is engaged to be moved to a retracted position to prevent flow of the writing fluid.

The present construction affords a simple and efficient means for effectively sealing the writing fluid against leakage when the pen cap is in place and the pen not in use. The purpose of the cap, of course, in the usual constructions, is to effect a seal of the writing mechanism, but that seal is merely effected exteriorly of the feed mechanism so that writing fluid will not be displaced from the fountain pen when subjected to excessive temperatures and handling when not in use. However, leakage may occur from the reservoir through the feed bar into the cap and about the pin nib and feed section. Thereafter, when the cap is removed from the writing point end of the barrel, there is a probability that the writing fluid forced through various reasons onto the nib and section of the pen will soil the fingers or clothing of the writer. The present invention, of course, contemplates the elimination of the above objections in the provision of a seal between the feed bar and the reservoir so that a a flow of ink to the pen nib may not be obtained at any time when the cap is in position on the writing point end of the barrel irrespective of excessive temperatures or of being jostled about in a handbag or in any other like conditions.

It is therefore one of the objects of this invention to provide a fountain pen having a writing fluid feed mechanism of the character above noted wherein the writing fluid is effectively sealed against flooding the writing point of the pen nib or the feed bar by means operable upon the positioning of the cap on the writing point end of the barrel, an unsealed condition being automatically obtained upon the removal of the cap.

A further object of this invention is to provide a fountain pen having a writing fluid feeding mechanism of the character hereinabove recited which is efficient and simple in operation and in construction and comparatively inexpensive to manufacture.

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 drawing, in which latter:

Figure 1 is a fragmental central sectional view of a fountain pen including a cap enclosing the writing point end of the barrel and having a writing fluid feeding mechanism embodying the features of the present invention;

Fig. 2 is an enlarged view similar to Fig. 1 showing the position of the feed bar after the cap is removed from the writing point end of the fountain pen;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2; and

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2.

Referring now more particularly to the drawing, the fountain pen incorporating the features of this invention comprises a barrel 10 for engaging a reduced extension 11 of the feed section 12, the reduced extension 11 preferably having a further reduced extension 13 on which a flexible writing fluid sack 14 is preferably secured. The feed section 12 is provided preferably with a central opening extending longitudinally over the full length thereof, the opening being preferably of two diameters with the larger diameter 16 at the forward end and the lesser diameter 15 at the rear end forming a shoulder 17 intermediate the ends thereof.

A cup-shaped member 18 preferably formed of a metal not affected by writing fluids is disposed in the enlarged opening 16 with the base thereof resting against the shoulder 17. The base of the cup-shaped member is provided with an aperture 19 in alignment with an aperture 20 of a

gasket 21 resting against the inner surface of the base of the cup-shaped member 18.

A shell 22 preferably of a metal not affected by writing fluids is provided for enclosing the inner end of a feed bar 23, the shell 22 having telescopic engagement with the cup-shaped member 18 to provide the feed bar with longitudinally slidable movement within the bore of the cup-shaped member 18. The feed bar 23 extends beyond the outer end of the feed section 12 in the usual manner and receives a pen nib 24 in engagement about one side of the periphery thereof, the pen nib extending inwardly between the shell 22 and the outer periphery of the feed bar for fixed engagement therebetween by a frictional fit. The pen nib 24 is slit to provide a channel 25 through which the writing fluid may flow to the writing surface, the slit extending a substantial distance inwardly from the outer end of the pen nib.

The feed bar 23 is preferably provided with a longitudinally extending opening 26 which is enclosed at the outer end thereof by the pen nib 24 and communicates with an aperture 27 in the base of the shell. An insert 28 is disposed in the opening 26 of the feed bar and extends preferably from the inner end thereof to substantially the inner end of the slit or channel 25 of the pen nib. The insert is preferably provided with a channel 29 and a plurality of fissures 30, both of which extend preferably the full length of the insert to conduct ink to the channel 25 of the pen nib from the flexible writing fluid reservoir 14 in the manner hereinafter described.

A compression spring 31 having one end seated in a recess 32 in the feed bar 23 and the other end bearing against the bottom 17 of the cup-shaped member urges the shell and slidable feed bar in one direction to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir through the apertures 19 and 20 of the cup-shaped member to the space between the end of the shell and the base of the cup-shaped member and thence through the aperture of the shell and the passage 26 to the channel 25 of the pen nib. The shell and feed bar are limited in their extended movement by means of the fingers 22a preferably struck out from the material of the shell for engagement with the ends of registering slots 33 in the side walls of the cup-shaped member. The cup-shaped member is, in turn, held against the shoulder preferably by means of a retaining ring 34 which is sprung into a peripheral groove 35 within the bore of the enlarged opening 16.

In order that the shell 22 and feed bar 23 may be moved in the other direction to a retracted position against the compression of the spring 31, opposed arms 36 may be struck up from the material of the shell for engagement with the inner sealing cap 37 of the cap 38. When the cap is screwed onto the end of the barrel, the inner sealing cap engages the fingers 36 and moves the shell and feed bar against the compression of the spring 31 to a position where the bottom of the shell engages the gasket on the bottom of the cup-shaped member. The aperture 27 of the shell is stopped-off by the sealing gasket and the apertures 19 and 20 are cut-off by the seating of the shell on the gasket.

The compression spring 31 automatically moves the shell and engaged feed bar outwardly when the cap is removed to a position such that the fingers 22a engage the ends of the slots 33. The compression of the spring is such that it will resist the usual pressure during the course of ordinary writing and permits the unseating of the apertures through which ink flows. When the cap is placed on the end of the barrel, a sufficient pressure is employed to overcome the tension of the compression spring 31 and a seal is effected by the gasket, the apertures of the shell and cup-shaped member being disposed on opposed sides of the center thereof.

While but a single embodiment of this invention is 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. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured metallic shell enclosing one end of the feed bar and having longitudinally slidable movement in the bore of the barrel and a passage for conducting writing fluid from a reservoir in the barrel to a pen nib mounted on said feed bar, an apertured seat in the barrel against which the inner end of said shell engages in a retracted position thereof, a compression spring for moving said slidable shell and feed bar in one direction, means for limiting such movement to an extended position whin the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means in engagement with said cap for moving said shell and slidable feed bar in the other direction to said retracted position against the compression of said spring to prevent flow of writing fluid when said cap is disposed on the barrel.

2. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured shell enclosing one end of the feed bar and having longitudinally slidable movement in the bore of the barrel, said feed bar having a passage in communication with the aperture of the shell for conducting writing fluid from a reservoir in the barrel to a pen nib mounted between said feed bar and said shell, an apertured seat in the barrel against which the inner end of said feed bar engages in a retracted position thereof, automatic means for moving said shell and slidable feed bar to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means in engagement with said cap for moving said shell and slidable feed bar to said retracted position to prevent flow of writing fluid when said cap is disposed on the barrel.

3. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured shell enclosing one end of the feed bar, an apertured cup-shaped member telescopically engaging said shell and disposed in the open end of said barrel, said shell having longitudinally slidable movement in the bore of said cup-shaped member and a passage in communication with the aperture of the shell for conducting writing fluid from a reservoir in the barrel to a pen nib mounted between said feed bar and said shell, the bottom of said cup-shaped member forming an apertured seat in the barrel against which the inner end of said feed bar engages in a retracted position thereof, automatic means for moving said shell and slidable

feed bar to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means in engagement with said cap for moving said shell and slidable feed bar to said retracted position against said seat to prevent flow of writing fluid when said cap is disposed on the barrel.

4. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured shell enclosing one end of the feed bar, an apertured cup-shaped member telescopically engaging said shell and disposed in the open end of said barrel, said shell having longitudinally slidable movement in the bore of said cup-shaped member and a passage in communication with the aperture of the shell for conducting writing fluid from a reservoir in the barrel to a pen nib mounted between said feed bar and said shell, the bottom of said cup-shaped member forming an apertured seat in the barrel against which the inner end of said feed bar engages in a retracted position thereof, automatic means for moving said shell and slidable feed bar in one direction, means on said cup-shaped member for limiting such movement to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means in engagement with said cap for moving said shell and slidable feed bar in the other direction to said retracted position against said seat to prevent flow of writing fluid when said cap is disposed on the barrel.

5. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured shell enclosing one end of the feed bar, an apertured cup-shaped member telescopically engaging said shell and disposed in the open end of said barrel, said shell having longitudinally slidable movement in the bore of said cup-shaped member and a passage in communication with the aperture of said shell for conducting writing fluid from a reservoir in the barrel to a pen nib mounted between said feed bar and said shell, the bottom of said cup-shaped member forming an apertured seat in the barrel against which the inner end of said feed bar engages in a retracted position thereof, automatic means for moving said shell and slidable feed bar in one direction, said cup-shaped member having elongated slots for receiving fingers struck out of said shell for limiting such movement to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means in engagement with said cap for moving said slidable feed bar in the other direction to said retracted position to prevent flow of writing fluid when said cap is disposed on the barrel.

6. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured shell enclosing one end of the feed bar, an apertured cup-shaped member telescopically engaging said shell and disposed in the open end of said barrel, said shell having longitudinally slidable movement in the bore of said cup-shaped member and a passage in communication with the aperture of said shell for conducting writing fluid from a reservoir in the barrel to a pen nib mounted between said feed bar and said shell, the bottom of said cup-shaped member forming an apertured seat in the barrel against which the inner end of said feed bar engages in a retracted position thereof, automatic means for moving said shell and slidable feed bar in one direction, said cup-shaped member having elongated slots for receiving fingers struck out of said shell for limiting such movement to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means extending from and formed integrally with said shell in engagement with said cap for moving said slidable feed bar in the other direction to said retracted position to prevent flow of writing fluid when said cap is disposed on the barrel.

7. In a fountain pen including a cap for enclosing the writing point end of the barrel, a feed bar, an apertured shell enclosing one end of the feed bar, an apertured cup-shaped member telescopically engaging said shell and disposed in the open end of said barrel, said shell having longitudinally slidable movement in the bore of said cup-shaped member and a passage in communication with the aperture of said shell for conducting writing fluid from a reservoir in the barrel to a pen nib mounted on said feed bar, the bottom of said cup-shaped member having a sealing gasket and forming an apertured seat in the barrel against which the inner end of said feed bar engages in a retracted position thereof, a compression spring having one end seated in a recess in said feed bar and the other end bearing against the bottom of said cup-shaped member for moving said shell and slidable feed bar in one direction, means between said shell and said cup-shaped member for limiting such movement to an extended position when the cap is removed to permit flow of the writing fluid from the reservoir to said passage, and means in engagement with said cap for moving said slidable feed bar in the other direction to said retracted position to prevent flow of writing fluid when said cap is disposed on the barrel.

WILLIAM R. CUTHBERT.