

Aug. 22, 1950

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2,519,966

FOUNTAIN PEN

Filed June 3, 1947

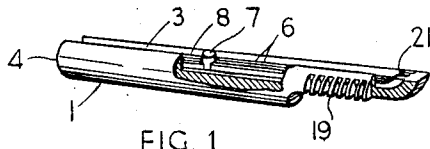


FIG. 1

FIG. 7

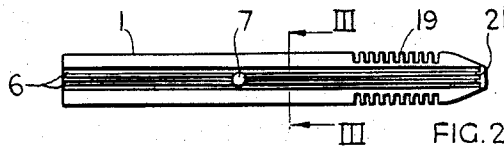
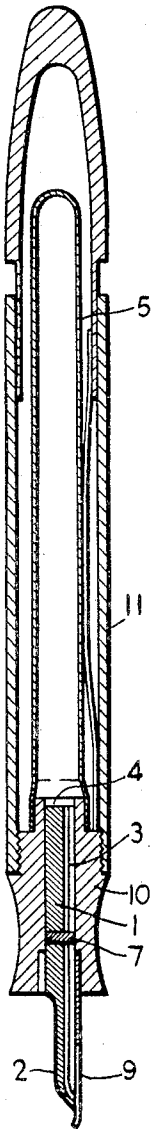


FIG. 2

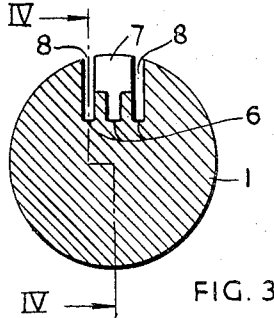


FIG. 3

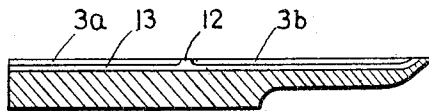


FIG. 4

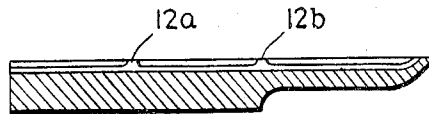


FIG. 5

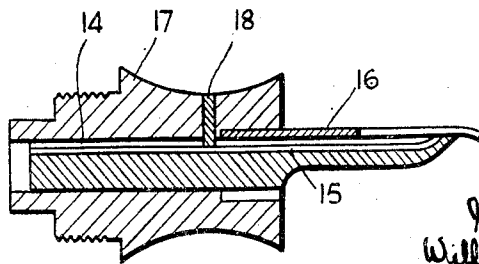


FIG. 6

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# UNITED STATES PATENT OFFICE

2,519,966

## FOUNTAIN PEN

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Application June 3, 1947, Serial No. 752,039  
 In Great Britain June 11, 1946

2 Claims. (Cl. 120—50)

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This invention relates to fountain or reservoir pens and particularly to the ink feeding arrangements for such pens.

In a fountain pen having an ordinary pen nib the feed means for the ink to the pen nib comprises a feed bar consisting of a rod-like member which at its rear end is of circular section and which is frictionally held in a circular longitudinal hole in the nib section of the pen. This hole at its forward end is of slightly larger diameter than at the rear end so as to accommodate the pen nib between its inner face and the upper face of the feed bar. The feed bar has a main slot extending from its rear end to a point close to its front end and in the base of this slot there are formed two or three narrow capillary grooves, two of which are cut on either side of the base, which also extend for the same distance as the main slot. In using the fountain pen with such a feed bar, at the commencement of writing the capillary grooves first fill with ink and then the main slot is filled. The ink is thus delivered to the underside of the pen nib and as it flows from the nib more ink passes down the grooves and slot. As the ink flows away bubbles of air enter the main slot through the hole in the pen nib and travel to the reservoir. The ink held in the grooves and slot in the feed bar is greatly in excess of what is required for writing with the result that a heavy flow takes place and blobs of ink may drop from the pen nib. Still further, leaky conditions are produced in the pen.

To overcome the difficulties of a too free flow of ink it is usual to provide transverse slots in the forward part of the feed bar to collect excess of ink flowing from the main slot and capillary grooves. While more-or-less satisfactory conditions have been established for certain inks there is now a tendency to use inks which flow more freely with the result that the difficulties of flooding and leaking are increased.

It is an object of the present invention to provide a feeding arrangement for a fountain pen by which more satisfactory control of the ink flow to the pen nib can be effected even when the more freely flowing inks are employed.

According to the present invention a feed bar for a fountain pen, has a main longitudinal slot extending from the rear end thereof to a point just short of the front end thereof, at least two narrow capillary grooves at the bottom of said slot, of which two are positioned, one on each side of the slot, and a bridge extending transversely of the slot, dividing said slot into two parts, but spaced from the sides of the slot so as

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to form narrow ink passages between it and the walls of the slot. Conveniently, the bridge is constituted by a pin fixed in the longitudinal slot in the feed bar. Alternatively, the bridge may be formed by cutting the main slot in two aligned parts, separated by the bridge, and wherein the capillary grooves are formed past the sides of the bridge. A plurality of bridges may be provided.

The invention further envisages the combination with a feed bar having a longitudinal main slot extending from the rear end thereof to a point just short of the front end thereof, and at least two narrow capillary grooves at the bottom of said slot, of which two are positioned, one on each side of the slot, of a nib section having a projection from the inner face thereof extending into the main slot to constitute a bridge with narrow ink passages between said bridge and the walls of the main slot. The projection in the nib section may be a pin fixed in a hole in said nib section.

Forms of feed bar according to the invention will now be described by way of example and with reference to the drawings in which:

Figure 1 is a perspective view, partly sectioned of a feed bar having a pin bridge.

Figure 2 is a plan view of the feed bar shown in Figure 1.

Figure 3 is an enlarged cross section on the line 3—3 of Figure 2.

Figure 4 is a longitudinal section along a line similar to line IV—IV of Fig. 3 but of a feed bar having the main slot milled in two parts.

Figure 5 is a longitudinal section similar to Figure 4 but having two bridges formed by milling the main slot in three parts.

Figure 6 is a section of a nib section with projecting pin assembled with a feed bar and nib.

Figure 7 is a section of a fountain pen with a feed bar as shown in Figure 1.

Referring now to Figures 1, 2, 3 and 7 the feed bar 1 is formed in the usual way from a length of circular rod of ebonite. It is tapered at the front end 2 in the usual way and a main slot 3 approximately 0.06 inch wide and 0.03 inch deep is milled from the rear end 4 where the feed bar 1 will enter the ink reservoir 5, see Figure 7, to a point 21 just short of the front end 2. Three narrow capillary grooves 6 are milled further into the bar 1 at the bottom of the main slot 3. About half way along the length of the feed bar, a hole is drilled therethrough at the centre of the main slot. Into this is inserted a pin 7 of ebonite which is of such a size that its periphery is spaced from the walls 8 of the main slot 3 by

distance about equal to the width of the capillary grooves 6.

The feed bar together with a nib 9 is assembled in a nib section 10 which is threaded into the front end of the fountain barrel 11 in usual manner, as shown in Fig. 7.

In use, it is found that when commencing to write, the capillary grooves 6 first fill with ink from one end to the other of the feed bar. The main slot then fills behind the bridge 7, the portion of the slot in front of the bridge remaining empty. Ink is fed to the nib 9 and as it passes away, the supply is maintained through the capillary grooves. Air passes backwards from the nib along the front part of the main slot, past the sides of the bridge and thence along the rear part of the main slot to the reservoir 3. The flow of ink is satisfactorily controlled and flooding and leaking is prevented.

In Figure 4, the main slot is milled in two parts 3a, 3b leaving a bridge 12 extending between them. Capillary grooves 13 are milled in the bottom of the two part main slot and also through the bridge 12.

In the form of the invention shown in Figure 5, the main slot is milled in three parts leaving two bridges 12a and 12b. Capillary grooves are milled in the bottom of the three part main slot and also through the bridges.

The action and assembly of the feed bars shown in Figures 4 and 5 is similar to that shown in Figures 1 and 2 as will be understood.

Figure 6 shows an alternative arrangement in which a feed bar of usual form, having a main slot 14, and capillary grooves 15 is assembled with a nib 16 in a nib section 17. The nib section has a radial hole formed in it, and in this hole is inserted a pin 18 of ebonite which projects into the main slot 14, to contact the bottom thereof and which is of such size that it is spaced from the walls of the main slot by an amount about equal to the width of the capillary grooves.

The action of the nib assembly shown in Figure 6 will be understood to be similar to that of the nib assembly shown in Figure 7 and described above.

Transverse slots 19 may sometimes be provided in the front end of the feed bar, though usually they may be omitted.

In all the constructions described it is to be understood that the bridge extends fully between the base of the main slot of the feed bar and the inner surface of the nib section.

What I claim is:

1. In a fountain pen an ink reservoir, a nib section at the open end of the ink reservoir, a feed bar and pen nib in the nib section, the feed bar having a main longitudinal slot extending from the rear end thereof to a point which is short of the front end thereof at least two narrow capillary grooves formed in the bottom of said slot of which two are positioned, one on each side of the slot and a fixed bridge extending transversely of the main longitudinal slot for the full depth thereof dividing said slot into two parts but spaced from the sides of the slot so as to form narrow passages between it and the sides of the slot.

2. In a fountain pen, a nib section having an axial opening therein and adapted to be fastened in the end of a fountain pen barrel, and a feed bar positioned within the axial opening within the nib section, said feed bar having a main longitudinal slot extending from the rear end thereof to a point just short of the front end thereof, at least two narrow capillary grooves formed in the bottom of said slot, of which two are positioned, one on each side of the slot, and a fixed bridge extending transversely of the slot dividing the slot into two parts, the bridge spaced from the sides of the slot so as to form narrow passages between it and the sides of the slot, and a nib disposed within the axial opening in the nib section spaced forwardly relative to said bridge.

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