

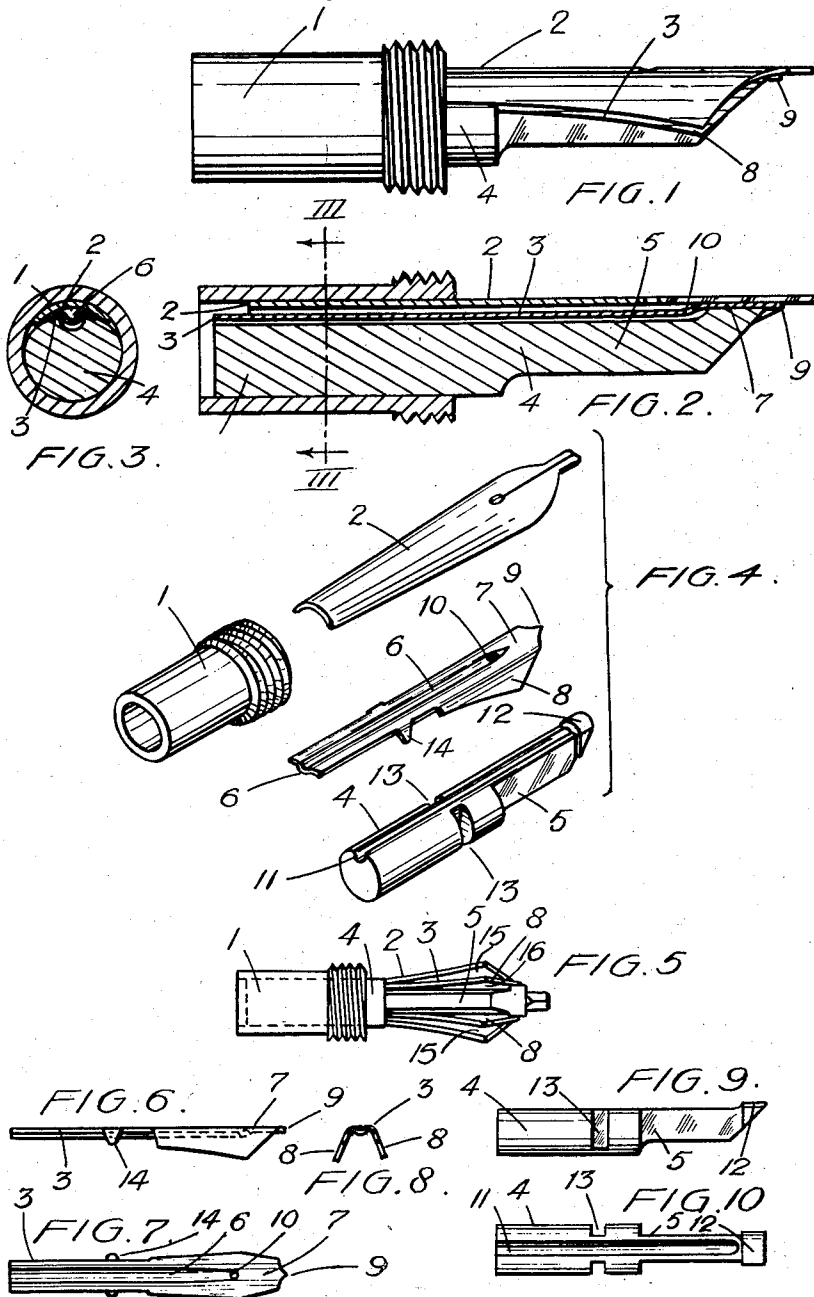
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FOUNTAIN PENS

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## FOUNTAIN PENS

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2 Claims. (Cl. 120—50)

This invention of improvements in fountain pens has for its object to improve the flow of ink from the mouth of the main reservoir to the nib, and to obviate the usual machining operations incidental upon the use of vulcanite feed bars. A primary consideration with feed bars is the employment of a material having a surface conducive to the easy flow of ink in contact therewith. Vulcanite is a material frequently used with the result that the general shape of a feed bar made from a rod thereof, coupled with whatever longitudinal grooves, slots and holes are demanded by the pattern under construction, necessitates a number of machining operations, the avoidance of which by employing a different material would simplify and cheapen production, provided, of course, that the efficient ink-flow properties associated with vulcanite can be retained or even improved.

According to the invention, a fountain pen has a feed bar in the form of a strip of metal shaped to lie along the concavity of the nib and forming a central longitudinal groove where it contacts the nib surface so as to constitute an ink duct, said feed bar being held in position by inserting the tails of the superimposed feed bar and nib in the mouth of the ink reservoir, and also inserting a sealing plug between said tails and the wall of the mouth. The mouth of the reservoir may be formed in a detachable insert sleeve adapted to be screwed into the reservoir as an alternative to the actual mouth of the reservoir. The longitudinal groove is conveniently made by pressing the metal feed bar with an arched section reversed in relation to the concavity of the nib and extending from the tail end to a point just short of the forward end which is located at or near the point of the nib.

The sealing plug is preferably made with a forward extension from the mouth of the reservoir to lie along the outer face of the metallic feed bar so as to form an auxiliary feed bar.

In order that the said invention may be readily understood an embodiment thereof will be described by way of example with the aid of the accompanying drawings wherein:

Figure 1 is an elevation of an interchangeable fountain pen unit, according to the invention, in which the nib and feed bar are carried by an insert sleeve adapted to be screwed into the mouth of the ink reservoir;

Figure 2 is a longitudinal section of Figure 1;

Figure 3 is a transverse section on the line III—III of Figure 2;

The foregoing figures are drawn to a scale larger than that of the following figures:

Figure 4 is an exploded view showing in perspective the four parts used in the construction of the unit illustrated in Figures 1-3;

Figure 5 is an inverted plan of Figure 1;

Figure 6 is a side elevation of the metal feed bar;

Figure 7 is a plan of Figure 6;

Figure 8 is an end view of Figure 6;

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Figure 9 is a side view of the plug in the form of an auxiliary feed bar; and

Figure 10 is a plan view of Figure 9.

In the embodiment the invention is shown applied to an interchangeable unit including a threaded sleeve 1 in which the nib 2, metallic feed bar 3 and sealing plug in the form of an auxiliary feed bar 4 are tightly held. The sleeve is adapted to be screwed into the main reservoir of the pen, and thus a unit may be selected and fitted according to the character of nib desired. It will be understood, however, that the nib 2, metallic feed bar 3 and plug 4 may be directly applied to the actual mouth of the main reservoir (not shown) which will replace the detachable mouth-piece 1.

The tail of the metallic feed bar 3 together with the tail of the nib 2 on which it is superimposed are introduced into the mouth of the sleeve 1 and are solidly fixed and sealed therein. For this purpose the plug member 4 is introduced, one end of which wedges in the mouth between the aforesaid superimposed metal feed bar and nib, and the plug 4 has a forward extension 5 from the tail running along the metal feed bar 3 towards the point of the nib either overlapping or (as shown) short of the feed bar end.

The metal feed bar 3 is arched at 6, such arching being reversed to the arching or concavity of the nib 2 so as to give a space of approximate elliptic, half-elliptic, or irregular elliptic section, the ends of which are sharply pointed (as seen in Figure 3) which help by capillarity to bring about the flow of ink in the space, and this, coupled with the metallic surfaces of the feed bar and nib, ensures easy flow of the ink.

The metallic feed bar 3 comprises a tail member having the arched section 6 aforesaid leading to a forward or nose part into which the arch section extends and flattens out at 7 with the forward part corresponding to the internal shape of the nib at the pointed end. Said forward part includes side wings 8 to correspond approximately to the curved sides of the nib 2, and these extending wings 8 are so designed in relation to the nib that a space 15 is left between the wings and the nib (as seen in Figure 5) and this space 15 on each side of the metal feed bar constitutes subsidiary ink ducts. Owing to the use of metal for the feed bar 2 these wings 8 can be made extremely thin giving maximum reservoir capacity not only between their respective outer surfaces and the nib, but also between their respective inner surfaces and the plug member 4 as hereinafter described. The forward part of the metal feed bar is thus a trough fitting within the nib and this trough finishes with a pointed end 9 directed towards the pointed end of the nib; the stub tip or point 9 may lie over or partly over the nib point. The longitudinal ink groove 6 formed between the feed bar 3 and nib 2 and extending from the tail end of the feed bar and finishing short of the pointed end 9 of the latter may have a hole 10 or slot through the material of the feed bar at or towards the end of the groove 6 whereby ink from the groove not only runs from the groove to the concave surface of the nib, but also through said hole to the top of the feed bar.

The plug 4 by which the assembly of feed bar and nib is secured within the mouth of the pen reservoir or insert as hereinbefore described may be made in any suitable material, particularly a material which can be moulded, such for example cellulose acetobutyrate. The tail end of the plug which fits within the mouth of the reservoir or insert is approximately cylindrical with a longitudinal groove 11 so as to fit the tail of the feed bar closely. The forward extension 5 lies along the length of the metal feed bar and terminates at or near the end of the trough of the feed bar or past the same up to the point 9. This forward extension 5 of the plug 4 is narrowed with flats

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so as to leave a space between itself and each side wing of the feed bar (see Figure 5), said space constituting another subsidiary ink duct 16. The longitudinal groove 11 of the plug 4 is carried along practically the entire length of the plug finishing just short of the outward tip of the forward extension 5 thereof, and said tip may be curved or raised slightly at 12 out of line to meet the metal feed bar 3. Transverse slots 13 may be formed in the plug to receive ears 14 on the edges of the metallic feed bar, and thus maintain the plug 4 correctly in position relatively to the feed bar 3.

I claim:

1. An ink feeding device for the outlet end of the reservoir of a fountain pen comprising in combination a nib including a transversely arched body and a feed opening, a feed bar having a tail portion disposed beneath the body of the nib and a nose lying beneath the tip of the nib, an opening in said feed bar at the nose thereof, said bar provided with a groove leading from its inner end to said opening at its nose, said opening registering with the opening of the nib, wings at opposite edges of the bar and offset from the same side thereof in the zone of said registering openings, ears also at opposite edges of the bar spaced from and offset in the same direction as the wings and located between the wings and the inner end of the bar, and a plug having side slots interlockingly receiving said ears and also having a groove communicating with said registering openings.

2. An ink feeding device for the outlet end of the reservoir of a fountain pen comprising in combination a nib of trough shape with a writing point at one end and a

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tail portion at the opposite end adapted for mounting in the mouth of said reservoir, a metal feed bar having a tail piece and a nose piece shaped to fit the nib trough to provide therewith a main ink feeding duct leading from the tail end to the writing point, ears offset in the same direction from opposite edges of the bar, side wing plates spreading laterally from the nose piece to a width less than that of the nib trough to provide a first set of subsidiary feed ducts between said side wing plates and the adjacent portions of the nib when the nib and feed bar are assembled together, and a plug having a forward extension and recesses on each side adjacent the side wing plates of the feed bar to form in conjunction therewith a secondary set of subsidiary ink feed ducts leading to said point, said plug also having transverse slots behind said recesses receiving said ears.

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