

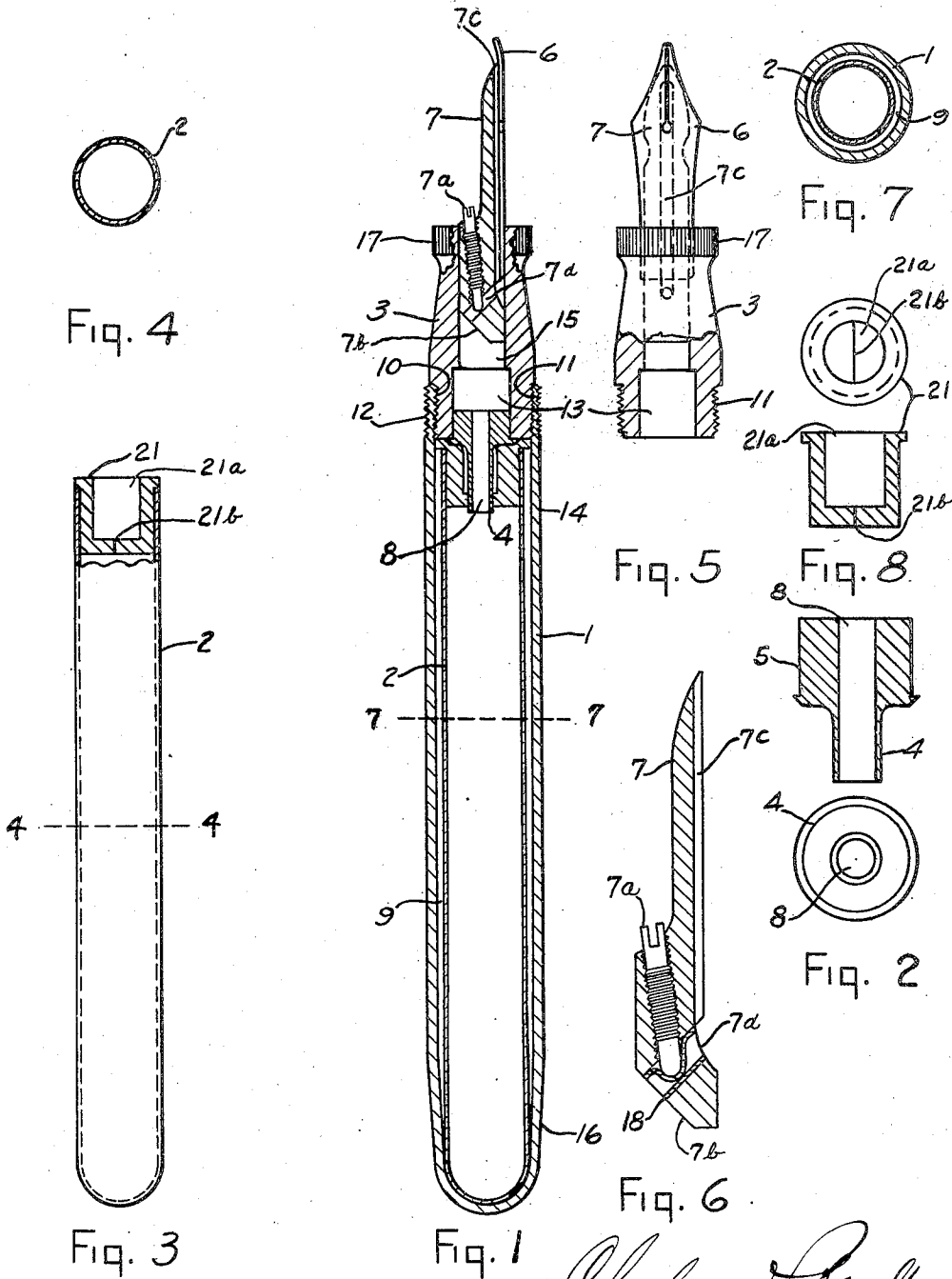
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FOUNTAIN PEN AND THE INK SUPPLY THEREFOR

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FOUNTAIN PEN AND THE INK SUPPLY
THEREFOR

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2 Claims. (Cl. 120—42)

This invention relates to fountain pens and particularly to the manner of renewing the supply of ink and to the feeding of the ink.

I provide a glass vial filled with ink, which vial has a specially constructed rubber closure which is normally closed, but when assembled with the pen feeds the ink through the closure.

Fig. 1 is an enlarged longitudinal cross section of the complete fountain pen, minus the cap, (not shown) with the ink vial in place in the barrel of the pen, with the ink supply in communication with the section of the pen for use; also showing the adjustable feed for regulating the flow of ink to the nib.

Fig. 2 is an enlarged cross section of the connection for the flow of ink from the vial to the section.

Fig. 3 is an enlarged view of the complete ink vial, showing the rubber closure at the upper end in cross section.

Fig. 4 is a cross section of the ink vial shown in Fig. 3 along lines 4—4.

Fig. 5 is an enlarged view of the fountain pen section, which section carries the ink feed and nib on the outer end. This view also illustrates the bore through the section for the flow of ink and the opening at its lower extremity for the insertion of the connection illustrated in Fig. 2.

Fig. 6 is an enlarged modified view of the ink feed with adjusting screw, shown in longitudinal cross section.

Fig. 7 is a cross section of the pen barrel assembly along lines 7—7.

Fig. 8 is a longitudinal cross section of the rubber closure for the ink vial and immediately above it is shown a plan view of the closure.

Referring to the drawing, Fig. 1 represents the barrel of the pen which is provided with an ink vial 2, which latter is provided with a soft rubber closure 21 and which is shown assembled with the vial in Fig. 3.

The barrel 1 is threaded at its upper end, both inside and outside for purposes of assembly with the section 3 and a cap which protects the nib.

Section 3, is threaded at its lower end as shown at 11, for the purpose of assembly with the barrel 1. Section 3 supports a stainless steel connection 5, Fig. 2 which latter is constructed with tube 4 and channel 8 to conduct the flow of ink into space 13 and 15 of the section. Section 3 is constructed with a round bore at its upper end to receive the feed 7 and nib 6. Knurled end 17 is for convenience in assembling section 3 with barrel.

Connection 5, Fig. 2 is machined to make a friction fit into the opening 13 of section 3; the tube 4 is of a length so that when section 3 is assembled with barrel 1, it will pass through the slit 21^b in the diaphragm of closure 21 so that the ink may flow freely through channel 8 of the connection, as shown in the assembly Fig. 1.

Closure 21 of the ink vial is provided with a cavity 21^a and is moulded of soft rubber intact without slit 21^b which slit is afterwards cut into it so as to leave the two edges of the slit clean to the end, that when the vial is not assembled with the fountain pen or the section is removed from the barrel, slit 21^b automatically closes and seals the ink in the vial, and, when section 3 is assembled with the barrel with the vial in place in it, the tube 4 of connection 5 presses against the wall with slit 21^b and as it is screwed into place, the tube 4 separates the edges of the slit and is forced through the slit 21^b of closure 21 to the inner side of it, as illustrated in the assembly Fig. 1 and the ink is then permitted to flow into the section.

In Fig. 6, 7 represents a conventional ink feed in which 7^a is a screw, 7^b a tapered part, 7^c an ink channel and 7^d another ink channel and 18 is a soft rubber tube.

The ink vial 2 is preferably made of glass with the shoulders of the soft rubber closure 21 flush with the outside diameter of the vial.

The space 9 between the ink vial 2 and the barrel 1, Fig. 1, is to avoid rapid changes in temperature which affect the flow of ink due to expansion and contraction. A seal is made between section 3 and closure 21 and a seal is also made by tube 4 of connection 5 when forced through slit 21^b in the lower wall of the rubber closure and no ink will flow except through the channel 8 into the spaces 13 and 15 of the section to the nib. It will be noted that the walls of part 21, soft rubber closure, are substantially uniform in thickness on the outside walls and the bottom, see Fig. 8 of the drawing. This is for the purpose of providing a reliable and automatic closure of the slit 21^b when the connection 5 with tube 4 which are supported by section 3, is withdrawn from the slit in the closure. The closure is molded into the shape illustrated in Fig. 8 and the slit 21^b is cut after molding and vulcanizing, the elasticity inherent to a soft rubber molded part with a thick wall and supported by the vial, is such, that when tube 4 is withdrawn from slit 21^b the slit is instantly closed by the edges of the slit assuming its original molded position. The seals above referred to prevent the ink from messing of the outside of the glass vial so that if

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it has to be handled when replacing it, the hands will not be soiled. My purpose is to make the vial 2 and closure 21 when assembled with the supply of ink, fit loosely into the barrel 1 so that
 5 when the pen is empty the section may be unscrewed and the barrel inverted so that the empty vial will fall out of the barrel and a full vial may be inserted without handling the empty one.

- 10 Ink vial 2 with ink therein and closure in place may also be assembled with the assembled section carrying part 5, before assembly of the section with the barrel, by pressing tube 4 into the slit 21^b of the closure 21, after which the pressure
 15 of the rubber wall on tube 4 will hold the vial and section together for assembly with barrel 1.

I claim:

1. A fountain pen comprising an ink supply, a section for assembly with the barrel, said section
 20 being provided with ink feeding means and a nib, a vial for the ink supply for assembly with the barrel and section, said vial being provided with a soft rubber closure having a slit, and means on the inner end of said section compris-

ing a tube slightly smaller in outside diameter than the length of the slit, for insertion into said slit of the closure, whereby the soft rubber closure is compressed to grip said tube to prevent leakage when the section and vial are assembled
 5 with the barrel.

2. A fountain pen comprising a barrel with a cavity to hold a vial for the ink, a section with assembly means on its inner end for connection
 10 to said barrel, said section being provided at its outer end with a nib and a feed plug with ink channels, said section also supporting a tube at its inner end for the flow of ink through said tube and said vial being provided with a resilient rubber closure having a slit for sealing the
 15 ink in the vial before assembly with the section, said slit being slightly larger than the outside diameter of said tube, whereby when said tube and vial are joined by the forcing of the tube into the slit of the closure on the vial, the closure is
 20 compressed and the tube sealed against leakage when the section, vial and barrel are assembled.

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