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FOUNTAIN PEN

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1 Claim. (Cl. 120—50)

This invention relates to a fountain pen of that type which includes a replaceable ink cartridge within the barrel of the pen; the objects of my invention being to provide an improved ink feed means between the cartridge and the nib of the pen to assure a constant and proper flow of ink at all times.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is an enlarged sectional elevation of my improved fountain pen.

Figure 2 is a sectional elevation of the pen-nib and ink feed unit detached.

Figure 3 is a cross-section on line 3—3 of Fig. 2.

Figure 4 is a fragmentary view of the cartridge and plug before puncturing of the latter.

Referring now more particularly to the characters of reference on the drawing, the barrel of the pen comprises a pair of separate front and rear sections 1 and 2, removably screwed together at adjacent ends, as at 3. The front end of the front section and the rear end of the rear section are threaded as at 4 for interchangeable engagement with a cap 5, which is provided with a clip C preferably screwed in the head of the cap as shown.

The rear end of the rear section 2 is closed, but the front end of the section 1 is formed with a short plain bore 6 followed by a relatively small tapped bore 7 which communicates with the larger bore 8 of the barrel. Removably fitting in said barrel bore 8 and extending substantially from end to end thereof is an ink cartridge 9, made of any suitable rigid but cheap material and having a soft rubber plug 10 in its forward end. This plug is provided with an initially blind bore 11 extending outwardly from its inner end, leaving a puncturable web 12 outwardly of said bore, as shown in Fig. 4. The plug is also formed with a flange 13 about its outer end which engages the rim of the cartridge. The cartridge, of course, is inserted in or removed from the barrel by unscrewing and separating the two sections of the barrel.

A substantially cylindrical and relatively long ink feed bar 14 has the pen nib 15 rigidly secured thereon in a suitable manner, as by solder, as in-

dicated at 16, along the sides and toward the rear end of the nib. The rear end portion of the nib and the bar 14 are of substantially cylindrical form as a unit, adapted to seat in the bore 8 of barrel section 1. Rearwardly of the nib, the bar 14 is formed with a threaded portion 17 adapted to screw into the tapped bore 7. Rearwardly of this threaded portion, said bar is formed with a relatively small extension 18 beveled off along one side as at 19 to form a puncturing needle or spike, which, when the portion 17 is fully screwed into the barrel, projects wholly into the barrel bore 8 as shown in Fig. 1. The length of the needle is greater than the axial extent of the web of the plug, while its diameter is smaller than that of the plug bore 11. The needle is also tapered, in addition to the beveling 19, as shown at 20, so as to provide a sealing fit in the plug web when the latter is punctured and the beveled portion is projected entirely through the web.

The bar 14 is provided with a longitudinal passage 21 which extends from the point of the needle to a termination short of the forward end of said bar, and with longitudinally spaced lateral passages 22 leading from the passage 21 to the under side of the nib. The passages 22 are disposed with a forward slant as shown, and the bar 14 therebetween is cut down as at 23 to provide a longitudinal clearance under the nib.

In operation, the bar 14 normally remains screwed in place, being only removed when necessary for cleaning out or the like. Since the ink cartridge when initially inserted is longer than the distance from the rear end of the bore 8 to the needle when the barrel sections are screwed together, the plug 10 is immediately punctured upon the barrel sections being screwed together. Due to the tapering form of the needle, the punctured plug web makes a positive seal with the needle, preventing any ink leakage and also facilitating withdrawing of the plug from the needle when changing the ink cartridge. Due to the flange 13 on the plug, the puncturing pressure does not cause the plug to be forced into the cartridge, and thus enables the latter to be made in the cheapest possible form without sacrifice of efficiency.

The arrangement of the pair of lateral ink passages 22 in the bar 14, with the clearance therebetween directly under the nib, assures a proper and constant feeding and flow of ink to the nib, without any drops falling from the nib, or on the other hand without any annoying stoppage of the flow due to the cartridge becoming air-bound.

When the cartridge is empty, it is only neces-

sary to uncouple the barrel sections, pull the cartridge plug clear of the needle, re-insert a fresh cartridge, and again couple the sections together.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

A fountain pen including a barrel adapted to contain a supply of ink, an ink feed bar having a nib mounted thereon, said bar projecting rearwardly from the nib and into the barrel to communicate with the ink supply; the bar having a straight longitudinal passage extending forwardly from its rear end and terminating under the nib and longitudinally spaced lateral passages extending with a forward slant from said longitudinal passage to the periphery of the bar at spaced points under the nib and there being a longitudinal clearance formed in the outer surface of the bar between the peripheral terminations of the lateral passages.

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