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FOUNTAIN PENS

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Fig. 1

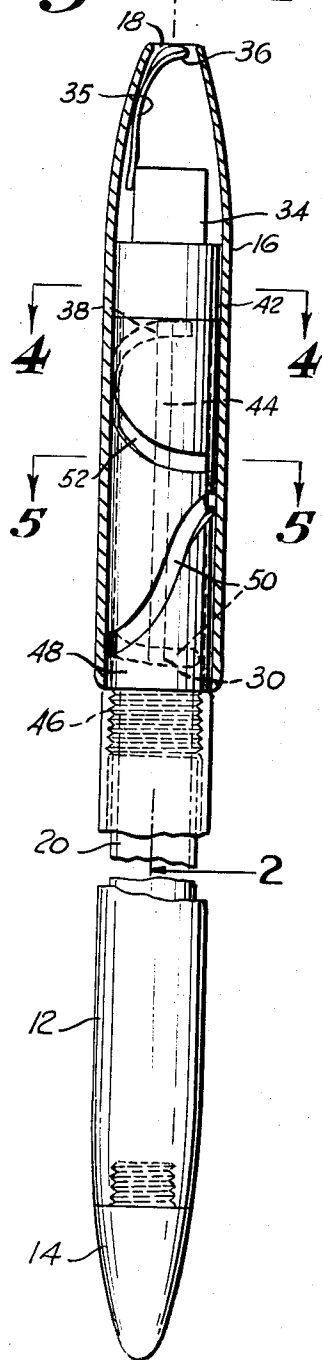


Fig. 2

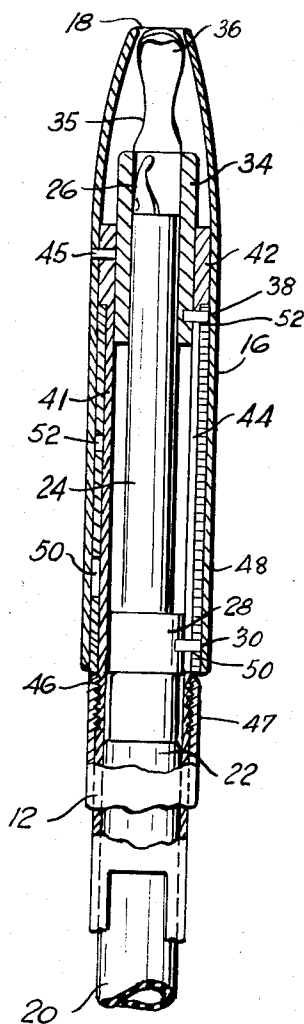


Fig. 3

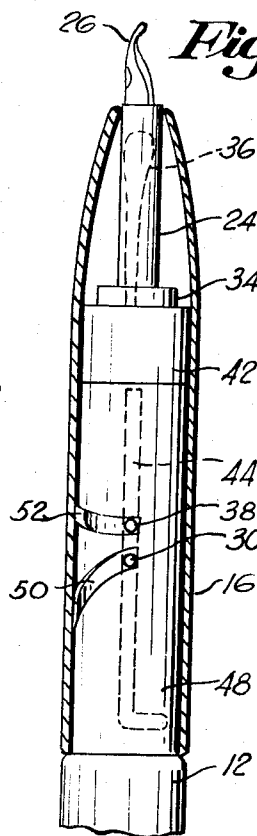


Fig. 4

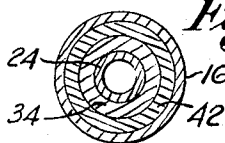
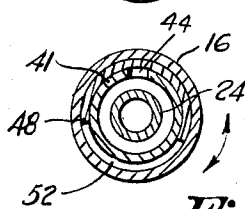


Fig. 5



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FOUNTAIN PENS

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1 Claim. (Cl. 120—42.03)

This invention relates to fountain pens, and refers more particularly to fountain pens wherein the pen point is adapted to be projected through an upper barrel portion of the pen.

Fountain pens are constituted primarily of two basic parts, namely, a lower barrel and an upper barrel. These parts are generally held together frictionally or by means of threaded ends. The user normally separates the two parts from each other to expose the pen point and places the upper barrel superposedly on the lower barrel. In some cases, the upper barrel is misplaced and, consequently, the usefulness of such fountain pens is limited. It has been found that this drawback would be eliminated by connecting the two barrels together with other parts of the pen in such manner that each barrel may function as a separate operative unit in effecting axial movement of the pen point slidably through an opening in the upper barrel. Expedients provided for this purpose in prior art have not been satisfactory, since they have been devised with uncomely protuberances and like obstructions, thereby making manipulation quite difficult.

It is an object, therefore, of the present invention to provide a greater degree of practicability in a fountain pen, through the provision of a tubular guide member disposed in an upper barrel of the pen and connected to the lower barrel which moves the pen point axially through an opening in the upper barrel upon turning either upper or lower barrel in either a clockwise or counterclockwise direction, respectively.

Another object of the present invention is to reduce the number of parts normally required in fountain pens, through the provision of a single, flexible closure which is mounted on a tubular member, and which opens and closes the opening in the upper barrel depending upon the position of the pen point.

Other objects will become apparent during the course of the following specification.

In the attainment of the aforesaid and other objectives, the inventive concept of the present invention may be realized through the provision of a fountain pen which includes an upper barrel fixedly connected with a collar of a tubular sleeve. A tubular guide sleeve is disposed circumjacent on the tubular sleeve and is firmly connected with a lower barrel, both of which function as an integral unit upon turning either barrel in a clockwise or counterclockwise direction, in moving a pen point axially through an opening in the upper barrel while simultaneously causing another short tubular member carrying a flexible closure for closing the opening, to move axially. Thus, the closure for covering the opening is retracted when the pen point is extended, and conversely, the opening is covered when the pen point is retracted.

The closure and pen point are axially moved in opposite directions by guiding projected members mounted on an ink reservoir tube and the short tubular member

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through slots disposed in the tubular guide sleeve and the tubular sleeve, respectively.

A fuller understanding of the present invention may be had by referring to the following description taking into conjunction the accompanying drawing, showing by way of example, a preferred embodiment of the inventive concept.

In the drawing:

Figure 1 is an axial section of the fountain pen of the present invention showing the pen point in a retracted position with various parts shown in side elevation.

Figure 2 is a partial axial section of the pen taken along the line 2—2 of Figure 1.

Figure 3 is a partial axial section of the pen showing the pen point in an extended position.

Figure 4 is a transverse section of the pen taken along the line 4—4 of Figure 1.

Figure 5 is a transverse section of the pen taken along the line 5—5 of Figure 1.

Referring now to the drawing in greater detail, wherein like reference numerals indicate like parts, the fountain pen of the present invention includes a lower barrel 12 which carries a threaded tapered cap 14, and an upper barrel 16 which is provided with an opening 18 formed at one end thereof.

An ink reservoir 20 is removably connected at its end 22 to an ink reservoir tube 24 which is provided with a pen point 26 removably disposed at the opposite end thereof.

The tube 24 has a collar 28 which carries a pin or guide 30. Thus, the reservoir tube 24, the pen point 26, the collar 28, the guide 30, and the ink reservoir 20 move axially as one single, integral unit within the confines of the pen barrels 12 and 16.

A sleeve 34 is slidably mounted upon the ink reservoir tube 24. One end of the sleeve 34 carries a flexible stem 35 and a closure cap 36, while the opposite end of the sleeve 34 carries another pin or guide 38. The stem 35, the cap 36, and the guide 38 are firmly connected with the sleeve 34 and are slidable on the tube 24 as another single unit.

Figures 1 and 2 illustrate the pen point 26 in its retracted position within the confines of the tubular sleeve 34, the closure cap 36 being wedged against the opening 18, while Figure 3 illustrates the pen point 26 extending exteriorly of the opening 18.

The cap 36 is of such size that it will cover the opening 18 and will tightly engage the inner surfaces of the upper barrel 16 when the sleeve 34 is extended, so that the stem 35, and the cap 36 are projected forward.

A sleeve 41 is coaxially mounted upon the sleeve 34. The sleeve 41 has an integral collar 42 at one end thereof and is provided with an L-shaped slot 44 to accommodate the guides 30 and 38 of the coaxially movable ink reservoir tube 24 and the sleeve 34, respectively.

The sleeve 41 is firmly fixed to the upper barrel 16 by a pin 45 extending through the collar 42 and the upper barrel 16.

The sleeve 41 has an end 46 which is connected by screw threads with a threaded end 47 of the lower barrel 12. Thus the barrel 12 may be rotated and moved longitudinally with respect to the sleeve 41.

A guide sleeve 48 is rotatably mounted upon the sleeve 41 and has the same outer diameter as the collar 42.

The guide sleeve 48 has two helical slots 50 and 52 formed therein to accommodate the guides 30 and 38, respectively.

The slot 52 is substantially twice as long as slot 50. The slot 52 has the form of a sharply rising spiral, while the slot 50 has a substantially annular portion which continues as a slowly rising spiral (Fig. 1).

The sleeve 48 is firmly connected to the lower barrel 12 by soldering or the like. Therefore, the lower barrel 12 and the tubular guide sleeve 48 function as one single, integral unit, since, upon turning the lower barrel 12 manually clockwise or counterclockwise while holding the upper barrel 16 steadily with another hand, a relative movement will be created between the sleeves 41 and 48 due to the threaded connections 46 and 47.

The operation of the pen is as follows:

To extend the pen point 26 through the opening 18 from the position shown in Figures 1 and 2 to the position shown in Figure 3, the user turns the lower barrel 12 counterclockwise (looking in the direction of Fig. 5), guiding the projected guide 38 downwardly through the slots 44 and 52 and thus causing the closure cap 36 to move downward into the confines of the short tubular sleeve 34. Simultaneously, the pen point 26 begins to move upward through the confines of the upper barrel 16 toward the opening 18 due to the upward movement of the guide 30 along the slots 50 and 44. When the pen point 26 is fully extended and the closure cap 36 is disposed within the upper barrel 16, the guides 30 and 38 have reached the upper and lower ends of slots 50 and 52, respectively, and are located in the middle of the slot 44, as illustrated in Figure 3.

Conversely, to retract the pen point 26 into the barrel 16 and to cover the opening 18 with the closure cap 36, the lower barrel 12 is turned clockwise manually while holding the upper barrel 16 steadily with another hand. Then the above described procedure will be reversed.

One of the important features of the present invention is that the described writing unit requires a minimum of manipulation to obtain an instant writing position of the pen point. The pen is furthermore fully compact and forms one single unit, thereby eliminating the possibility of losing the barrels. Its instantaneous response is another highly desirable feature.

Another advantage of the present invention is that the novel pen will have longer life with resulting economy of replacement and maintenance and with a completely negligible increase in manufacturing costs.

It is obvious that various changes may be made in details of the described pen within the scope of the claim and without departing from the spirit of the invention. Hence, it is to be understood that the invention is not to be limited to the specific details shown and described herein.

What is claimed is:

A fountain pen, comprising an upper barrel having upper and lower ends, said upper end having an opening formed therein, a lower barrel engaging the lower end of said upper barrel and constituting a continuation thereof, said lower barrel being rotatable relatively to said upper barrel, a reciprocable pen point adapted to extend

through said upper end opening in an operative writing position and to withdraw within said upper barrel, a reciprocable disc-shaped closure cap located within said upper barrel and conformable to said upper end opening, said cap being adapted to close said upper end opening and to withdraw within said upper barrel to a retracted position to free said upper end opening, a single flexible stem connected to an edge of said disc-shaped closure cap and movable therewith, an ink reservoir tube connected with said pen point, a collar firmly connected with said tube, a protruding guide carried by said collar, a sleeve carrying said stem and slidably mounted upon said tube, another protruding guide carried by said sleeve, another elongated sleeve enclosing said collar and the first-mentioned sleeve and having a longitudinal slot, said protruding guides extending through said slot, a pin connecting said other elongated sleeve with said upper barrel, and a guide sleeve rotatably mounted upon said other elongated sleeve and firmly connected with said lower barrel, said guide sleeve having two helical slots, one of the helical slots being a slowly rising spiral and the other one of the helical slots being a helix rising comparatively sharp and in a direction away from the direction of rise of the first-mentioned helix, the first-mentioned protruding guide being disposed in said slowly rising helical slot, the second-mentioned protruding guide being disposed in said sharply rising helical slot, each of said protruding guides being in contact with the edge of the helical slot in which it is disposed, whereby rotation of said lower barrel causes said protruding guides to come into contact with successive portions of the helical slot edges causing said protruding guides to move longitudinally within said longitudinal slot, the first-mentioned protruding guide moving jointly with said collar, said tube and said pen point, the second-mentioned protruding guide moving jointly with the first-mentioned sleeve, said flexible stem and said closure cap, the helical slots and the protruding guides being disposed so that the protruding guides move toward each other when said lower barrel is rotated in one direction and move away from each other when said lower barrel is rotated in the opposite direction, the relative rises of the helical slots being such that said pen point may be moved toward its operative writing position and said closure cap retracted simultaneously into its retracted position within the barrel, and vice versa.

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