April 15, 1952 F. D. WOODS 2,593,082

FOUNTAIN PEN

Filed April 15, 1947

Fig. 1

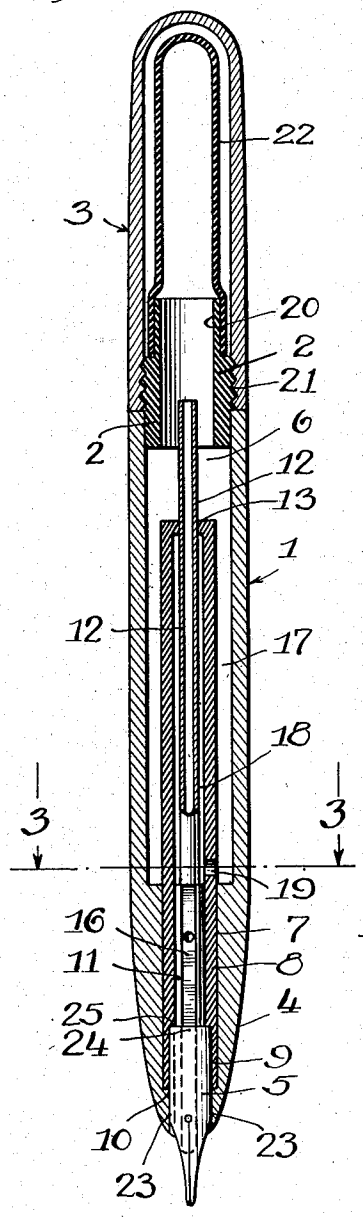


Fig. 2

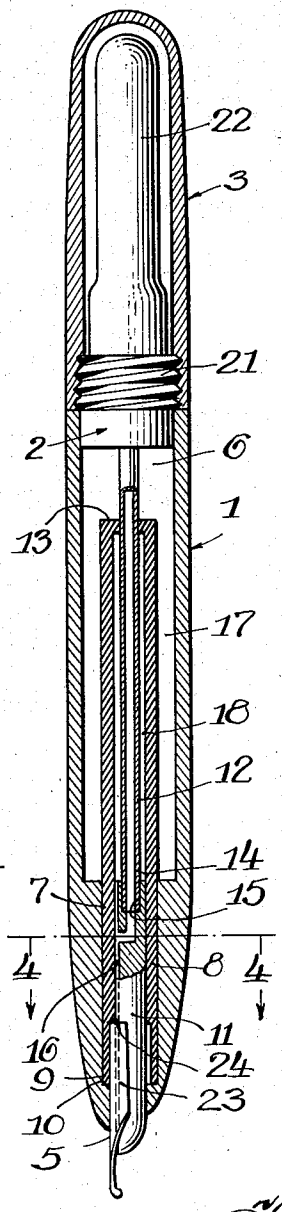
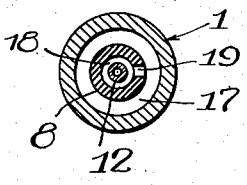


Fig. 3



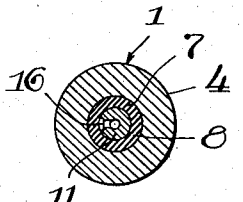


Fig. 4

INVENTOR.
Fred D. Woods
BY
Carl F. Keppler
Atty.

Patented Apr. 15, 1952 2,593,082

UNITED STATES PATENT OFFICE

2,593,082

FOUNTAIN PEN

Fred D. Woods, Glencoe, Ill., assignor to Autopoint Company, Chicago, Ill., a corporation of Illinois

Application April 15, 1947, Serial No. 741,462

4 Claims. (Cl. 120—42.16)

1

The present novel invention relates to fountain pens and especially to a novel pen assembly having a sleeve providing an ink reservoir or chamber communicating with the main ink supply in the barrel, but limiting the volume of the available ink in the primary ink receptacle and thereby eliminating or minimizing the danger of leakage.

Among the objects of the present invention is the provision of a novel fountain pen in which the ink supply is controlled in such manner as to prevent flooding.

The invention further comprehends a novel means and manner of supplying ink from the barrel to the nib assembly through a limited opening into a sleeve closed at its upper end and open at its other end for communicating with the nib assembly, whereby the volume of the available ink in the primary ink receptacle is limited to that collecting in the sleeve, and the only communication from the main ink supply in the barrel is through this limited opening.

Another important object of the present invention is the provision of a novel means and assembly providing a primary and secondary ink supply which affords maximum ink capacity, yet which is so constructed, arranged and designed that danger of flooding is eliminated or greatly minimized.

Another important advantage of the present invention is the provision of a fountain pen in which the barrel and associated parts lend themselves to manufacture by injection molding, thus resulting in a construction that is relatively cheap to manufacture and service.

The present construction further comprehends a novel valve means for controlling the supply of ink available to the nib.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

The invention further resides in the construction, combination and arrangement of parts illustrated in the accompanying drawing, and while there is shown therein a preferred embodiment, it is to be understood that the same is susceptible of modification and change, and comprehends other details, arrangements of parts, features and constructions without departing from the spirit of the invention.

In the drawing:

Figure 1 is a view in vertical cross-section through the novel fountain pen assembly.

2

Fig. 2 is a view, part in vertical cross-section and part in side elevation, of the assembly, the view being taken with the fountain pen rotated through approximately 90° from the position shown in Fig. 1.

Fig. 3 is a view in horizontal cross-section taken in a plane represented by the line 3—3 of Fig. 1.

Fig. 4 is a view in horizontal cross-section taken in a plane represented by the line 4—4 of Fig. 2.

Referring in more detail to the novel illustrative embodiment of fountain pen shown in the drawing, the assembly includes a barrel 1 having at one end a threaded collar 2 for the reception of a removable cap 3, and having its other end 4 tapered and so contoured as to receive and partially encompass a pen nib 5. The barrel is hollow throughout its length and for a substantial portion thereof the interior provides a relatively large ink reservoir 6. This relatively large bore merges into a smaller bore 7 which is adapted to receive and retain by a press fit a sleeve-like or tubular member 8 having its lower open end 9 abutting a shoulder 10 provided in the lower or nib end 4 of the barrel.

The sleeve 8 is adapted to receive a feed bar 11, the pen nib 5 and an air tube 12 projecting through the upper closed end 13 of the sleeve and shown as extending a substantial distance thereabove and opening into the collar 2 at the upper open end of the barrel. The lower end 14 of the air tube is preferably press-fitted into the bore 15 of the feed bar 11, with this bore communicating with a feed slot 16 in the upper surface of the feed bar and communicating with the pen nib 5.

The space 17 between the exterior of the sleeve 8 and the interior of the barrel 1 provides a large ink reservoir, while the concentric space 18 between the exterior of the air tube 12 and the interior of the sleeve 8 provides a primary ink receptacle connecting with the large ink reservoir 17 through the limited opening or passage 19.

The collar 2 is securely attached or affixed at one end to the upper open end of the barrel with its upper reduced end 20 and threaded intermediate portion 21 extending beyond the end of the barrel. Secured to and projecting above the upper reduced end 20 is a resilient and collapsible filler sack 22 to which access is secured by removal of the end cap 3 whenever the pen is to be filled or supplied with ink. Filling is accomplished by dipping the nib end of the pen into a bottle of ink, compressing and releasing the ink sack to thereby draw ink through the feed slot

16 and into the concentric space 18, through the port or opening 19 and into the concentric space forming the main ink reservoir 17.

After the filling operation has been completed and the space 17 is substantially filled with ink, the cap 3 is replaced. Thereafter as ink is withdrawn from the space or receptacle 18, ink is supplied thereto from the main reservoir 17 in the barrel through the opening 19, and due to the limited ink capacity of the space in the sleeve 8 and the fact that air therein remains entrapped, the limited quantity of ink in the space 18 is insufficient to cause flooding or leaking.

The novel fountain pen assembly is preferably composed of a suitable plastic composition. For example, the barrel itself may be composed of a plastic that is transparent or substantially transparent so that the quantity of ink contained or remaining in the reservoir 17 may be visible. The sleeve 8, air tube 12 and cap 3 may also be formed or composed of a suitable plastic, while the feed bar 11 may be of rubber or rubber-like composition molded to substantially conform to the concavity or under surface of the nib. To mount the latter in desired position on the feed bar, the opposite sides 23 thereof are so bent or formed as to be inturned and tightly grip the opposite sides of the feed bar with the end 24 of the nib engaging or abutting against the shoulder 25 formed in the sleeve 8. By this construction and arrangement, heat need not be applied to shape the feed bar to the nib.

The barrel and associated parts are so designed as to lend themselves to injection molding whereby the structure may be produced at minimum cost. Although the usual end cap for enclosing and protecting the pen nib is not shown, it is to be understood that the invention comprehends the provision of such a cap.

Having thus disclosed the invention, I claim:

1. A fountain pen comprising a hollow barrel having a longitudinally extending large bore providing an ink reservoir, a filler sack mounted at the upper end of the barrel for filling the reservoir, the lower end of the barrel having a reduced bore, a sleeve member located wholly within the barrel and mounted at its lower end in the reduced bore and projecting upwardly a substantial amount into the large bore and in spaced relation with the interior of the barrel, an air tube mounted within said member and in spaced relation with the interior thereof, the upper end of said member being closed about the air tube to provide an annular ink receptacle therebetween, a feed bar and a pen nib mounted within the lower end of said member and in communication therewith, said member having a relatively small opening disposed adjacent and opening into the lower end of the large bore and providing the only means of communication therewith for supplying ink to the ink receptacle between the air tube and said sleeve member.

2. A fountain pen comprising a hollow barrel provided with a longitudinal bore of relatively large cross-section but reduced to a smaller cross-section adjacent the nib end, a tubular member located wholly within the barrel and having its lower end anchored within the smaller cross-section of the bore and projecting upwardly into the barrel in spaced relation with the interior thereof, an air tube disposed within the tubular member in spaced relation with the interior thereof and with its upper open end projecting thereabove, the upper end of said tubular member being closed about the air tube to thereby provide an enclosure thereabout except for a restricted opening in the side wall of said member adjacent and opening into the lower end of the large bore and spaced from the upper closed end of said member, said opening providing a passage between the enclosure and the interior of the barrel, a pen nib and a feed bar mounted within the lower end of the tubular member and projecting beyond the lower end of the barrel, and filling means for drawing ink through said tubular member and into the barrel for filling the pen, whereby when the pen is filled the enclosure in the tubular member contains a limited quantity of ink for feeding to the feed bar and nib and which is replenished from the barrel through the restricted opening until the supply of ink in the large bore of the barrel is exhausted.

3. A fountain pen comprising a barrel providing an ink reservoir and having its lower end reduced and tapered, a nib assembly housed within the lower end and including a pen nib, a feed bar, an air tube and a sleeve mounted at its lower end in the reduced lower end of the barrel and projecting upwardly into the hollow barrel and encompassing the air tube and feed bar throughout the greater portion of their length, the sleeve being closed at its upper end about the air tube to provide an ink receptacle encompassing the air tube and communicating with the feed bar and nib and having a restricted port located adjacent the lower end of the ink receptacle and spaced from and below the closed upper end, said port providing the only passage communicating with the ink reservoir in the barrel for supplying ink to the interior of the sleeve.

4. In a fountain pen, a hollow barrel providing an ink reservoir throughout a substantial portion of its length, an air tube and a sleeve encompassing the air tube through the greater portion of its length and projecting a substantial distance upwardly into the hollow barrel and concentrically disposed therein to provide an annular space between the exterior of the tube and the interior of the sleeve and an annular space between the exterior of the sleeve and the interior of the barrel for the ink supply, a feed bar and a pen nib mounted within the lower end of the barrel and in communication with the air tube and the encompassing sleeve, said sleeve having a restricted opening adjacent the lower end of the annular space in the barrel for the passage of ink from this annular space in the barrel to the annular space in the interior of the sleeve and having its upper end closed about the air tube a substantial distance above the restricted port whereby to form an enclosure providing a primary ink receptacle of limited capacity for feeding ink to the feed bar and nib, and with the restricted opening providing the only passage between said annular spaces.

FRED D. WOODS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
564,938	Scritchfield	July 28, 1896
1,433,325	Winter et al.	Oct. 24, 1922
2,012,722	Krause	Aug. 27, 1935
2,105,189	Hanle	Jan. 11, 1938
2,400,768	Mohns	May 21, 1946