

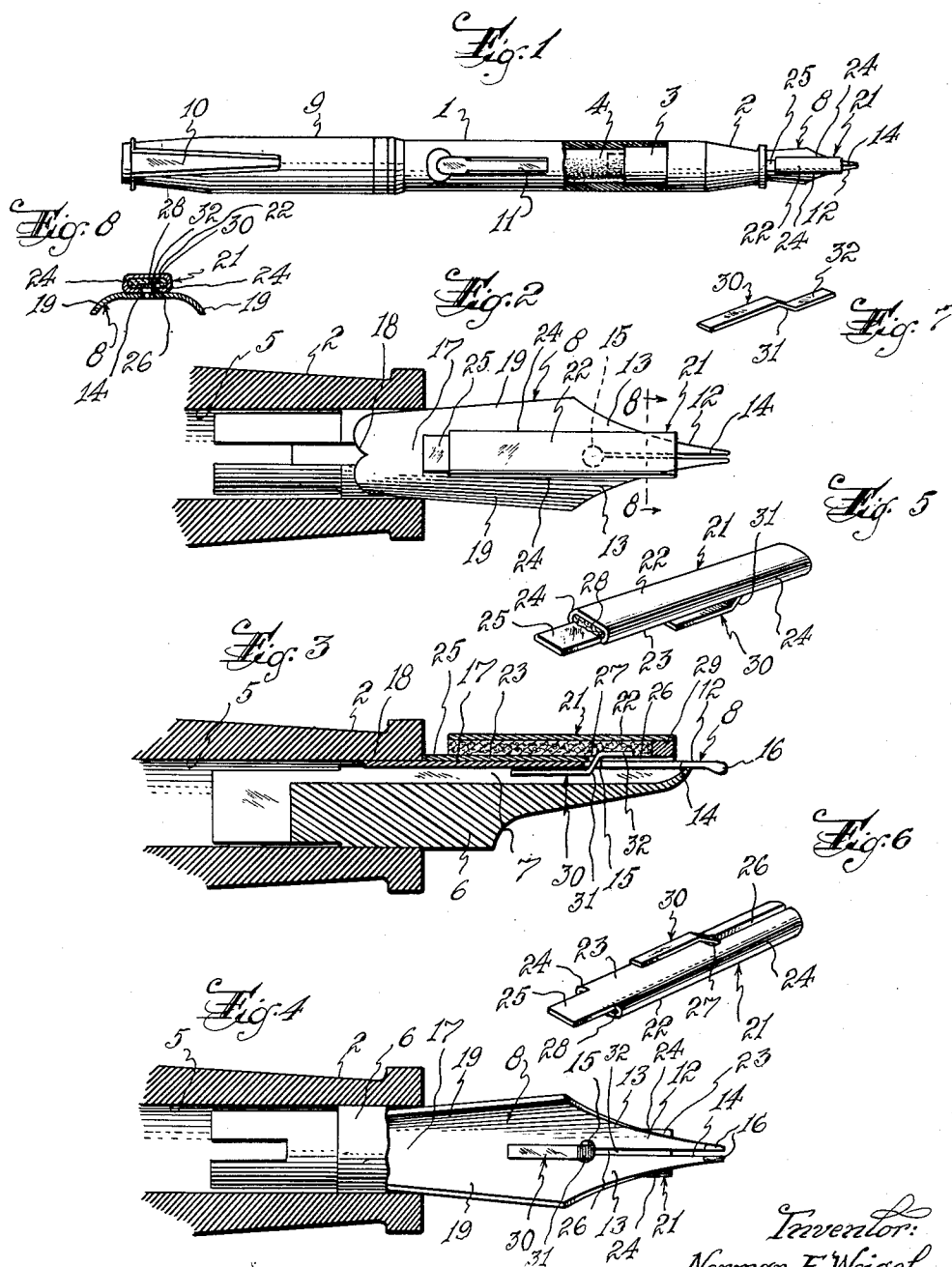
Oct. 5, 1954

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2,690,739

INK RESERVOIR AND FLOW CONTROL

Filed Jan. 21, 1953



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UNITED STATES PATENT OFFICE

2,690,739

INK RESERVOIR AND FLOW CONTROL

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Application January 21, 1953, Serial No. 332,256

3 Claims. (Cl. 120—51)

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This invention relates to fountain pens and more particularly to a new and useful improvement in a nib construction therefor.

In ordinary fountain pens, the ink flows by gravity or capillary action from the ink reservoir directly to the tip of the nib and on to the writing surface, the flow being initiated by a pumping action or flexing of the tip of the nib. However, air pressure, air bubbles or a vacuum in the feed line, usually interferes with the smooth, even flow of the ink, causing a heavy flow of ink or the interruption or the complete stoppage of the flow, whereby the ink continues to build up or back up on the writing surface. This results in a heavy line of ink and in wastage of ink. Such heavy lines take time to dry or necessitate blotting, and the wastage makes it necessary to replenish the supply of ink too often. Furthermore, when using such gravity feed fountain pens, there is a time lapse after the pen is put in writing position before the ink reaches the tip of the nib, which is objectionable.

It is the prime object of the present invention to eliminate such objections and difficulties by providing a fountain pen with means for changing the feed of the ink from a gravity or capillary action feed to a controlled feed.

It is another object of the invention to provide a fountain pen with an auxiliary ink reservoir or well adjacent the tip of the nib so that feed by gravity or by capillary action is unnecessary and is eliminated whereby air pressure, air bubbles or a vacuum cannot interfere with the feed of the ink to the writing tip.

Another object of the invention is to provide a fountain pen with a main ink reservoir, an auxiliary ink reservoir or well adjacent the tip of the nib, and means for guiding the flow of ink from the main to the auxiliary reservoir.

A further object of the invention is to provide a fountain pen with a reservoir of ink adjacent the writing tip so that when the pen is tilted on the writing surface for writing, the nib is inked for instantaneous writing, and flexing of the tip of the nib to start the flow by gravity or capillary action is not required.

Still another object of the invention is to provide a fountain pen with an auxiliary ink reservoir adjacent the tip of the nib so that when the pen is tilted on the writing surface for writing, the flow of ink is initiated by the weight of the ink itself so that the ink is continually in readiness and flows instantly when and only as needed.

A specific object of the invention is to provide a fountain pen with an inking device on the nib

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whereby a steady, smooth and even flow of ink is supplied to the writing tip, thus eliminating flooding of the tip or interruption of the flow of ink thereto such as might cause blotting or skipping in writing.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

Figure 1 is a top plan view of a fountain pen embodying the now favored embodiment of the invention, parts being broken away.

Figure 2 is an enlarged view of the nib end of the fountain pen showing the nib and feed bar in top plan view and the feed section of the pen in horizontal section.

Figure 3 is a similar view but showing the nib, feed bar and feed section in vertical section.

Figure 4 is a view similar to Figure 2 but showing the nib in bottom plan view and the feed section in horizontal section, parts being broken away and parts being omitted.

Figure 5 is an enlarged top perspective view of the auxiliary ink reservoir or well.

Figure 6 is an enlarged bottom perspective view thereof.

Figure 7 is a perspective detail view of the guide bar.

Figure 8 is a sectional view taken on the plane of the line 8—8 of Figure 2.

For the purpose of illustrating the principle of the invention, I have shown the pen nib in conjunction with a known type of fountain pen which includes a barrel 1 and a removably tubular section 2 at one end thereof. The tubular section 2 is formed with an integral extension 3 fitted into the open end of the barrel. An ink sac or the like 4 is connected to the end of the extension and serves as a main ink reservoir. The tubular section 2 is formed with a central longitudinal opening 5 extending therethrough and an ink feed bar 6 is fitted into said opening. The feed bar is provided with the usual longitudinal ink feed channel 7 communicating with the ink reservoir 4. A pen nib 8 is frictionally fitted between the ink feed bar and the wall of the opening 5.

The pen is provided with a cover 9 having a clip 10 for supporting the pen in the pocket of the user. A lever 11 is hinged to the barrel midway its ends for pumping the sac 4 in the usual manner.

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The pen nib 8 is formed of relatively inexpensive and hard or stiff material, for example, inherently resilient stainless steel and includes a writing end portion 12 having converging concave side edges 13, a central longitudinal slit 14 terminating in an opening 15, and the usual writing ball tip 16 at the meeting point of said side edges 13. The nib has a substantially flat or planar portion 17 extending along a central longitudinal zone between its side edges from the writing tip 16 to the heel 18, and curved side portions 19 extend outwardly from the planar portion 17. In forming this flat portion 17, there is a minimum of tendency to harden or stiffen the stainless steel so that the point or tip is flexible and resilient. As shown, the flat portion 17 is preferably somewhat wider than the ink feed channel 7, and at the junctures of the flat portion with the curved edge portions 19, the nib is rounded as indicated at 20, and preferably the nib is of approximately uniform thickness. With this construction, the pen nib is sufficiently flexible transversely so that it will properly conform to the feed bar 6 and the wall of the opening 5 in the tubular pen section 2. Furthermore, the flat portion 17 provides a uniform and positive contact with the edges of the ink feed channel 7 throughout the length of said flat portion when the nib is mounted in a fountain pen.

In accordance with the present invention, an elongated tubular case or housing 21 of sheet metal is mounted on the top surface of the nib 8 along its central flat portion 17. The housing has flat top and bottom walls 22 and 23, respectively, as viewed in Figures 3 and 5, and rounded side walls 24. The bottom wall 23 is formed with a flat extension 25, at one end, serving as an attaching lug which is soldered or welded or otherwise suitably fastened to the flat portion 17 of the nib adjacent its inner end. The remainder of the housing is unattached so that it resiliently engages the flat portion of the nib on opposite sides of the slit 14. The other end of the bottom wall is formed with a slit 26 terminating at its inner end in an enlarged opening 27. The opening 27 and the slit 26 of the bottom wall 23 are in alignment with the opening 15 and slit 14 of the nib 8.

A sponge 28 of cellulosic material or other ink absorbing material is fitted in the housing 21 and extends from its inner end to substantially the outer end thereof leaving a small space at the outer end which is plugged as indicated at 29, with any suitable material which does not absorb ink. A flat guide bar 30 of sheet metal is loosely positioned in the channel 7 of the feed bar 6 and disposed in parallel and contacting relation with the inner surface of the nib. The bar is formed with an upwardly slanting portion 31, as viewed in Figure 3, extending through the aligned openings 27 and 15 of the housing and nib, respectively, into the housing 21 where it continues forwardly toward the tip of the nib into an integral horizontal portion 32 underneath the sponge 28.

During writing operations, the ink from the sac 4 flows through the channel 7 in the feed bar 6 to the guide bar 30 where it is checked and guided through the aligned openings 15 and 27 in the nib 8 and housing 21, respectively, and into the interior of the housing where it is absorbed by the sponge 28. The flat portion 17 of the nib flexes freely from the writing tip 16 rearwardly to approximately the juncture of the longitudinal margins of the flat portion with the concave side

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edges 13. The ink however is fed from the sponge by the weight of the ink itself through the slit 26 in the housing 21 and flows along the flat portion 17 of the nib to the writing tip. The housing 21 yieldingly holds the portions of the writing end portion 12 at opposite sides of the slit 14 substantially in the same flat plane thereby eliminating scratching of the tip on the writing surface.

A supply of ink lies dormant in the sponge, and when the fountain pen is put in upright position in the pocket of the user, the sponge retains its full capacity of ink so that by merely tilting the pen to writing position on the writing surface, the ink is made available and ready for instant use as and when needed, and it is not necessary to wait until the ink flows from the main reservoir or sac by gravity or by capillary action. The sponge traps and checks the air pressure and air bubbles and eliminates any vacuum, as well as absorbs any excess flow of ink so that a smooth, steady, even line of writing results.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

What I claim is:

1. A fountain pen comprising a barrel having a main ink reservoir and an open end, a tubular section in said open end, a feed bar in said tubular section extending outwardly thereof, said feed bar having a longitudinal groove in its surface communicating with said main ink reservoir, a nib clamped between the feed bar and the tubular section, said nib having an opening and a communicating slit, a tubular housing on said nib having an opening in its wall portion and a communicating slit, said latter opening and slit being in alignment with the opening and slit in the nib, a cellulosic sponge in the housing, and a bar in said groove and extending through the aligned openings in the nib and housing for guiding ink from the reservoir to the sponge.

2. A pen nib having converging side edges adjacent one end meeting in a writing tip and also including a flat central longitudinal portion extending from said writing tip to the other end, there being transversely curved longitudinal edge portions extending outwardly from opposite longitudinal margins of said flat portion and from substantially the juncture of said converging side edges with said longitudinal margins of said flat portions toward the other end of the nib, said flat portion having an opening at a point intermediate its length and a slit extending longitudinally centrally thereof from said opening through said writing tip, a tubular housing secured at one end to said flat central portion, said housing having an opening in its body portion and a slit communicating with said opening, said latter opening and slit being in alignment with the opening and slit in said nib, ink absorbing material in said housing, and a bar carried by the nib and extending through the aligned openings in the nib and housing for guiding ink to the material in the housing.

3. A pen having converging side edges adjacent one end meeting in a writing tip and also including a flat central longitudinal portion extending from said writing tip to the other end, there being transversely curved longitudinal edge portions extending outwardly from opposite lon-

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gitudinal margins of said flat portion and from substantially the juncture of said converging side edges with said longitudinal margins of said flat portions toward the other end of the nib, said flat portion having an opening at a point intermediate its length and a slit extending longitudinally centrally thereof from said opening through said writing tip, a tubular housing secured at one end to said flat central portion, said housing having an opening in its body portion and a slit communicating with said opening, said latter opening and slit being in alignment with the opening and slit in said nib, a cellulosic sponge in said housing, and a bar carried by the nib and extending through the aligned openings in the nib and housing for guiding ink to the sponge in the housing, the other end of said housing resiliently pressing upon the writing tip of the nib at opposite sides of the slit in said

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nib whereby ink will be led between said flat portion and said housing and whereby the writing tip at opposite sides of the slit in the nib will be held in proper writing position.

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