

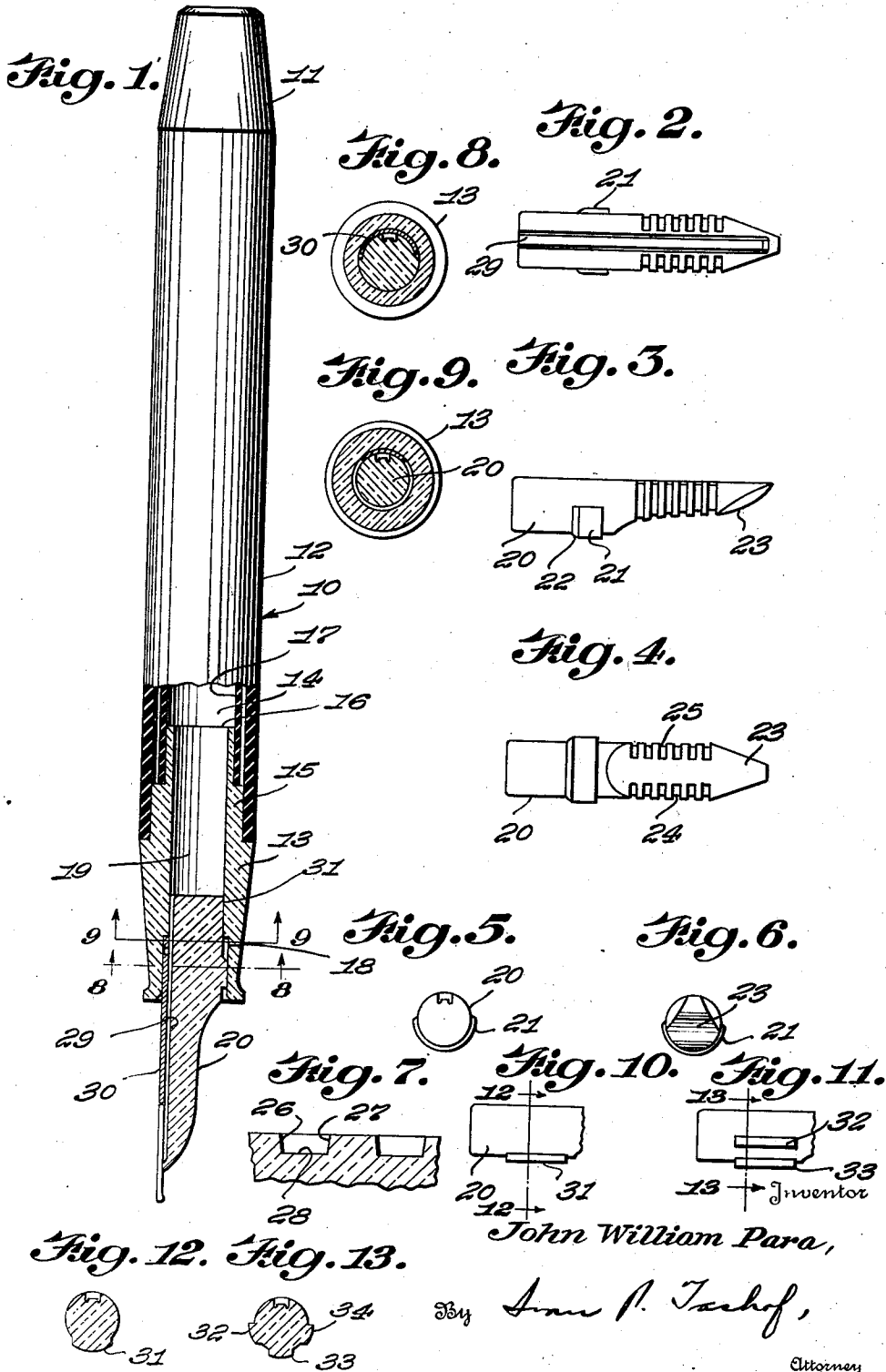
Dec. 21, 1943.

J. W. PARA

2,337,343

PEN

Filed April 1, 1941



John William Para,

Inventor

Attorney

UNITED STATES PATENT OFFICE

2,337,343

PEN

John William Para, Elizabeth, N. J., assignor to
David Kahn, Inc., North Bergen, N. J., a corpo-
ration of New Jersey

Application April 1, 1941, Serial No. 386,328

19 Claims. (Cl. 120—52)

The present invention relates to a fountain pen. More particularly the present invention relates to a novel feed for a fountain pen of the self-filling type.

It is customary in the prior art to provide fountain pens of the self-filling type and other types with a feed portion adapted to re-enforce the nib thereof and provided with a channel structure for feeding the ink to the pen nib.

It is also customary to provide a feed of this character with a comb or series of slots adapted to retain ink by capillary action and prevent the too rapid feed or spilling of the ink during writing or upon the cessation of writing.

Feeds of this character are adapted in general to fit within a bore at the lower end of the barrel, and the problem of providing an ink-tight fit around the feed channel has been a rather difficult one. It has been customary in general to provide the feed with a relatively cylindrical portion adapted to fit within the bore in order to prevent leakage or passage of ink around the feed aside from the passage of ink through the channel.

Although the various parts of the fountain pen have been conventionally fabricated from plastic material the feed of the pen in general has not been integrally molded throughout of such material. One reason is that the comb grooves or slots have customarily extended entirely through the feed and have been generally cut by a suitable instrument after the feed in general has been molded.

A similar operation has also been performed for the formation of a depression or channel through which ink has been fed under the pen nib.

The feed channel referred to in general has proven to be one of the trouble centers of the conventional fountain pen inasmuch as the relatively rough cut channel is prone to clog and when the channel is clogged it is sometimes difficult to ascertain just where the clot of ink has formed which impedes passage therethrough.

It has been found desirable to manufacture the feed of a pen of transparent material. However, even if the feed and barrel part be made of transparent material it is not possible to retain the same in truly transparent condition insofar as the channel is concerned if the channel is subsequently cut by an abrasive tool. This is because a roughening of the transparent material during cutting renders the same opaque.

It is one of the objects of the present invention to provide a pen feed and cooperating parts uni-

formly molded of a transparent plastic material.

Another object of the present invention is to provide a pen feed structure capable of being efficiently and economically molded.

A third object of the present invention is to provide a pen feed structure having relatively shallow combed grooves lending themselves to a molding operation but sufficiently extensive to retain ink therein.

A fourth object of the present invention is the provision of a pen feed structure having a balancing means adapted to center the feed within the barrel bore to promote an effective seal between the feed and the bore.

A fifth object of the present invention is to provide a pen feed with an integrally molded projection positioned diametrically opposite the pen nib to thereby center the feed within the bore housing the feed and nib and seal the inner end of the feed, within the relatively smaller bore.

A sixth object of the present invention is to provide a pen feed having relatively shallow comb slots of a shape adapted to efficiently retain ink by capillary action and yet capable of lending themselves to efficient molding.

A seventh object of the present invention is to provide a pen feed with a semi-circular projection on the side diametrically opposite the feed channel to thereby fill the relatively large bore housing both the feed and pen nib, and prevent accumulation of ink therein.

The eighth object of the present invention is to provide a relatively short pen feed which is nevertheless efficiently sealed within the bore of the barrel of the pen.

The ninth object of the present invention is to provide a projection in a portion of the pen nib which is adapted to maintain the nib and feed in constant uniform contact throughout the length and width of the pen nib.

Other objects and advantages of the present invention will be apparent from the subsequent description and figures of the drawing wherein,

Figure 1 is a side elevation of a fountain pen according to the present invention, partly in section;

Fig. 2 is a plan view of a feed according to the present invention;

Fig. 3 is a side elevation of the feed of Fig. 2;

Fig. 4 is a bottom plan view of the feed;

Fig. 5 is a rear elevation of the feed;

Fig. 6 is a front elevation of the feed;

Fig. 7 is an enlarged side elevation of a portion of the feed depicting the shape of the comb grooves;

Fig. 8 is a transverse section taken on the line 8-8 of Fig. 1;

Fig. 9 is a transverse section taken on the line 9-9 of Fig. 1;

Fig. 10 is a side elevation of a portion of a modified feed;

Fig. 11 is a side elevation of a portion of a third modified type of feed;

Fig. 12 is a transverse section taken on the line 12-12 of Fig. 10;

Fig. 13 is a transverse section taken on the line 13-13 of Fig. 11.

Referring to Figure 1, a fountain pen is indicated in general at 10 and is shown provided with the usual filling cap 11, the upper barrel section 12 and a lower barrel section 13.

The upper barrel section 12 is provided with the usual main bore 14 and is suitably molded from a plastic material.

The lower barrel section 13 is preferably molded of a transparent plastic material and is provided with the reduced portions 15 and 16.

The portion 15 is adapted to fit within the main bore 14 and may be held within the main bore 14 either by friction or by the conventional threaded joint, (not shown).

The upper reduced portion 16 of the lower barrel section 13 is adapted to receive the conventional rubber sac indicated at 17, which is held on the portion 16 in a manner well known in the art and forms a receptacle for the ink.

It is to be understood that the pen shown is preferably provided with the conventional self-filling arrangement of any suitable type which is capable of compressing the resilient sac 17, in order to expel air subsequent to the filling thereof by suction.

The lower pen section 15 is provided with the relatively larger bore 18 extending from the lowermost portion of the pen barrel proper and communicating with the interior of the ink sac 17 by means of a relatively smaller bore 19.

Extending through the bore 18 and terminating in a snug fit within the bore 19 is a pen feed proper 20 which is also preferably molded of a transparent material. The feed 20 is provided with the semi-circular projection on its lower side 21, having a slanting shoulder 22 adapted to facilitate the assembly of the feed within the bore 18. The feed 20 is also provided with a lower end 23 of a tapering conformation and a series of grooves extending partly about the circumference from top to bottom thereof indicated in general at 24 and 25.

As shown in particular in Figure 7, each of these grooves is provided with sloping side walls 26 and 27 and relatively narrow bottom 28. This particular shape of the grooves not only facilitates molding but also serves to retain and release the ink therefrom in a more efficient manner.

It will be noted that the comb grooves do not extend entirely through the feed as has been customary theretofore and it has been found that the provision of the comb grooves of this particular shape extending a substantial distance around the circumference of the feed furnishes sufficient capacity to retain the ink and to prevent spilling while writing and at the same time lends itself to the molding operation by which the entire feed is fabricated.

Extending longitudinally of the feed is a channel 29 which opens at its rear end to the bore 19 and terminates at its forward end short of the end of the feed. As shown in Figure 1 the pen nib 30 is adapted to fit in the bore 18 between the

upper surface of the feed and the wall of the bore.

It is obvious therefore, that in the absence of the projection 21 the feed 20 would not extend in a central position relative to the longitudinal axis of the pen proper. In other words, the feed 20 would be eccentric relative to the longitudinal axis of the pen to an extent determined by the thickness of the pen nib filling the space between the feed and the wall of the bore 18.

It has been found necessary heretofore in order to minimize leakage due to this eccentricity to provide the feed with a relatively long rear portion extending to the main bore of the pen. This was necessary because the area of contact between the rear end of the feed and the bore was a general oval shape and a longer area of contact was necessary to minimize leakage. With the present preferred construction however, the inner or rear end of the feed need only contact the wall of the smaller bore 19 for a relatively short distance, this area of contact being indicated at 31.

As shown particularly in the sectional view of Figure 8, the projection 21 also serves to fill up a portion of the bore 18. This serves to prevent any large accumulation of ink in the lower portion of the bore 18, if any of the ink should leak past the seal or area of contact.

With the construction here indicated, it is obvious that the pen will be able to receive points of various sizes inasmuch as the projection 21 does not extend to the pen nib itself, but is merely semi-cylindrical. If, however, a pen is made which is suitable to receive only a single size of pen nib then the projection 21 may extend over a greater area than that indicated. In other words, the projection 21 may extend to the edge of the nib itself. However, this is not necessary in order to promote sealing and would prevent the feed from receiving more than one size of nib.

As indicated in Figure 1 and previously stated both the feed 20 and the lower portion of the barrel 13 is molded from the transparent material. This plastic material may be any of the well known condensation products having transparent characteristics or a transparent nitrocellulose plastic or other plastic may be suitable.

If therefore, ink should accumulate within the channel 29 and clot therein, the clot may be observed through the rear of the feed 20 and through the transparent lower portion of the barrel 13.

Another function of the projection is to insure close contact between the nib and the feed throughout the length and breadth of the nib. It is obvious that where there is no projection equivalent to the projection 21 the pen nib will be in close contact with the pen at its inward end and may even be spaced from the pen at its outward end, inasmuch as the feed will not be in parallel with the longitudinal axis of the pen. This particular function just above set forth may be achieved not only by a projection entirely similar to projection 21, but by fragmentary projections of a relatively long character such as the projection 31 of Figures 10 and 12.

A somewhat better fit may also be obtained by providing the feed with three projections such as the projections 32, 33 and 34 shown in Figures 11 and 13. In each case, the projections function to retain the pen nib in firm contact with the feed throughout its length and breadth, and in addition to the advantages herein set forth,

this firm contact prevents the pen nib from leaking and also prevents the pen nib from drying out. Since there is a constant supply of ink present between the nib and the feed it is evident that a pen of the character described will start writing as soon as pressure is applied.

Referring to the drawing, and particularly to Figure 1, it may be noted that the pen nib 30 extends into the bore 18 so that its inner end abuts against the shoulder formed by the smaller bore 19. The pen nib therefore covers the channel throughout its passage through the bore 18, and consequently the ink will be fed by capillary force to the end of the feed groove without spilling or having any tendency to fill the bore 18. This phenomena occurs in particular because, as previously pointed out, the pen nib is in firm contact with the feed throughout its length and breadth.

It is claimed:

1. In a pen, a barrel having a main bore, a relatively small bore communicating with said main bore at one of its ends and having its other end communicating with a relatively larger third bore adapted to receive a pen nib, a feed member extending through said last-mentioned bore and having its inner end fitted snugly into said second mentioned bore, a pen nib seated on one end of said feed and positioned between the wall of the third bore and the feed, and a projection on the side of the feed remote from the nib and bearing against the surface of the barrel within the third bore to centralize the feed and nib assembly in said second and third-mentioned bores to thereby insure the snug, uniformly circumferential fit of the feed and the second-mentioned bore.

2. In a pen, a barrel having a main bore a relatively small bore communicating with said main bore at one of its ends and having its other end communicating with a relatively larger third bore adapted to receive a pen nib, a feed member extending through said last-mentioned bore and having its inner end fitted snugly into said second-mentioned bore, a pen nib seated on one end of said feed and positioned between the wall of the third bore and the feed, and an annular projection on the side of the feed remote from the nib and bearing against the surface of the barrel within the third bore to centralize the feed and nib assembly in said second and third-mentioned bores to thereby insure the snug, uniformly circumferential fit of the feed and the second-mentioned bore.

3. In a pen, a barrel having a main bore, a relatively small bore communicating with said main bore at one of its ends and having its other end communicating with a relatively larger third bore adapted to receive a pen nib, a relatively short feed member extending through the said last-mentioned bore and having its inner end fitted snugly into said second-mentioned bore, a pen nib seated on one end of said feed and positioned between the wall of the third bore and the feed and a substantially semi-circumferential projection on the side of the feed remote from the nib and bearing against the surface of the barrel within the third bore to centralize the feed and nib assembly in said second and third-mentioned bores to thereby insure the snug, uniformly circumferential fit of the feed and the second-mentioned bore, a feed channel extending longitudinally of said feed and communicating with said second-mentioned bore, and relatively shallow comb grooves extending partially

around the circumference of the lower end of said feed.

4. In a pen, a barrel having a main bore, a relatively small bore communicating with said main bore at one of its ends and having its other end communicating with a relatively larger third bore adapted to receive a pen nib, a relatively short feed member extending through the said last-mentioned bore and having its inner end fitted snugly into said second-mentioned bore, a pen nib seated on one end of said feed and positioned between the wall of the third bore and the feed and a substantially semi-circumferential projection on the side of the feed remote from the nib and bearing against the surface of the barrel within the third bore to centralize the feed and nib assembly in said second and third-mentioned bores to thereby insure the snug, uniformly circumferential fit of the feed and the second-mentioned bore, a feed channel extending longitudinally of said feed and communicating with said second-mentioned bore, and relatively shallow comb grooves extending partially around the circumference of the lower end of said feed, the feed and all of the elements associated therewith being integrally molded of a transparent plastic material.

5. In a pen, an integrally molded feed member provided with a longitudinally extending feed channel, a series of molded relatively shallow comb grooves adjacent one end thereof and a substantially semi-circular projection diametrically positioned, in opposed relation relative to the channel, between the comb grooves and the rear end of the feed, said projection being provided with a sloping rearward portion.

6. In a pen, an integrally molded feed member provided with a longitudinally extending feed channel, a series of molded, relatively shallow comb grooves adjacent one end thereof, and an integral projection positioned in opposed relation relative to the channel between the comb grooves and the rear end of the feed.

7. In a pen, a feed member formed integrally of transparent molded material, a feed channel integrally molded in said member, a barrel having a main bore and a transparent barrel portion surrounding said feed member and cooperating with the feed channel to permit visual observation of the course of ink through said feed member channel, a relatively small bore in the barrel communicating with said main bore at one of its ends and having its other end communicating with a relatively larger third bore adapted to receive a pen nib, said feed member extending through said last-mentioned bore and having its inner end fitted snugly into said second-mentioned bore, a pen nib seated on one end of said feed and positioned between the wall of the third bore and the feed, and a projection on the side of the feed remote from the nib to centralize the feed and nib assembly in said second and third-mentioned bores to thereby insure the snug, uniformly circumferential fit of the feed and the second-mentioned bore.

8. In a pen, a feed member formed integrally of transparent molded material, a feed channel integrally molded in said member, a barrel having a main bore and a transparent barrel portion surrounding said feed member and cooperating with the feed channel to permit visual observation of the course of ink through said feed member channel, a relatively small bore in the barrel communicating with said main bore at one of its ends and having its other end com-

municating with a relatively larger third bore adapted to receive a pen nib, said feed member extending through said last-mentioned bore and having its inner end fitted snugly into said second-mentioned bore, a pen nib seated on one end of said feed and positioned between the wall of the third bore and the feed, a projection on a side of the feed remote from the nib to centralize the feed and nib assembly in said second and third-mentioned bores to thereby insure the snug, uniformly circumferential fit of the feed and the second-mentioned bore, and relatively shallow comb grooves extending partially around the circumference of the lower end of the feed, said grooves having relatively narrow bottoms, and side walls tapering outwardly therefrom.

9. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower barrel portion having a wall member and a bore, a feed member having ink-retaining means fitted in said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a transparent feed channel in the upper side thereof to feed ink through the feed member and to the point of the pen nib, said feed channel having a smooth, non-clogging, transparent surface inhibiting impeding of the passage of ink therethrough, said feed channel upon visual observation from the rear of the feed member indicating the flow of ink therethrough.

10. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower barrel portion having a wall member and a bore, a feed member having ink-retaining means fitted in said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a transparent feed channel in the upper side thereof to feed ink through the feed member and to the point of the pen nib, said feed channel having the smoothness and non-clogging characteristics of a molded surface, whereby clogging of ink flowing through the feed channel is inhibited, said feed channel upon visual observation from the rear of the feed member indicating the flow of ink therethrough.

11. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower barrel portion having a wall member and a bore, a feed member fitted in said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a transparent feed channel in the upper side thereof to feed ink through the feed member and to the point of the pen nib, said transparent feed channel having a smooth, non-clogging, transparent surface inhibiting impeding of the passage of ink therethrough, said transparent feed channel upon observation from the rear of the feed member indicating the flow of ink through the rear of the feed channel and the quantity of the ink within the feed channel and the feed supply.

12. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower

barrel portion having a wall member and a bore, a feed member fitted in said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a transparent feed channel in the upper side thereof to feed ink through the feed member and to the point of the pen nib, said transparent feed channel being devoid of rough areas tending to clog said channel and impeding the passage of ink therethrough, said feed channel upon visual observation from the rear of the feed member indicating the flow of ink therethrough.

13. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower barrel having a wall member and a bore, a feed member fitted into said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a molded transparent feed channel in the upper side thereof to feed ink through the feed member, and to the point of the nib, clogging of ink through said feed channel being inhibited, said transparent feed channel upon visual observation from the rear thereof indicating the flow of ink therethrough.

14. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower barrel portion having a wall member and a bore, a feed member having ink-retaining means fitted in said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a transparent feed channel in the upper side thereof to feed ink through the feed member and to the point of the pen nib, and shallow comb grooves spaced from said feed channel and extending transversely of the feed member and partially around the circumference thereof, said feed channel having the smoothness characteristics of a molded surface, whereby clogging of ink flowing through the feed channel is inhibited, said feed channel upon visual observation from the rear of the feed member indicating the flow of ink therethrough.

15. In a pen, an upper barrel having a main bore adapted to hold a supply of ink, a lower barrel portion having a wall member and a bore, a feed member having ink-retaining means fitted in said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a transparent feed channel in the upper side thereof to feed ink through the feed member and to the point of the pen nib, said feed channel having a smooth, non-clogging, transparent surface, inhibiting impeding of the passage of ink therethrough, said feed channel upon visual observation from the rear of the feed member indicating the flow of ink therethrough, and projecting means on said feed member and bearing against the inner bore surface of the barrel to centralize the feed and nib assembly and insure snug uniformly circumferential fit of the feed and the lower barrel bore.

16. In a pen, an upper barrel having a main

bore adapted to hold a supply of ink, a lower barrel having a wall member and a bore, a feed member fitted into said lower bore, a pen nib positioned between the wall of the bore of the lower barrel portion and the feed member, said pen nib being in firm contact with the feed member for a substantial portion of its length, the feed member being provided with a molded transparent feed channel in the upper side thereof to feed ink through the feed member, and to the point of the nib, clogging of ink through said feed channel being inhibited, said transparent feed channel upon visual observation from the rear thereof indicating the flow of ink there-through, and projecting means on said feed member and bearing against the inner bore surface of the barrel to centralize the feed and nib assembly and insure snug uniform circumferential fit of the feed and the lower barrel bore.

17. In a pen, the assembly of a pen nib and a transparent feed member having a transparent feed channel in the upper side thereof, said pen nib being in firm contact with the feed member for a substantial portion thereof, said feed channel being molded in the feed member to produce a smooth wall, said feed member in its assembled position in the pen permitting the visual observation of the flow of ink through said feed channel.

18. In a pen, the assembly of a pen nib and a transparent feed member having ink-retaining means therein and a transparent feed channel in the upper side thereof, said pen nib being in firm contact with the feed member for a substantial portion thereof, the feed channel and ink-retaining means being molded in said feed member whereby the feed channel is provided with a smooth, non-clogging wall, said feed member in its assembled position in the pen permitting the visual observation of the flow of ink through said feed channel.

19. In a pen, the assembly of a pen nib and a transparent feed member having ink-retaining means therein, and a transparent feed channel in the upper side thereof, said pen nib being in firm contact with the feed member for a substantial portion thereof, the feed channel of said feed member having the smoothness and non-clogging characteristics of a molded surface whereby clogging of the ink flowing through the feed channel is inhibited, said feed member in its assembled position in the pen permitting the visual observation of the flow of ink through said feed channel.

JOHN WILLIAM PARA.