

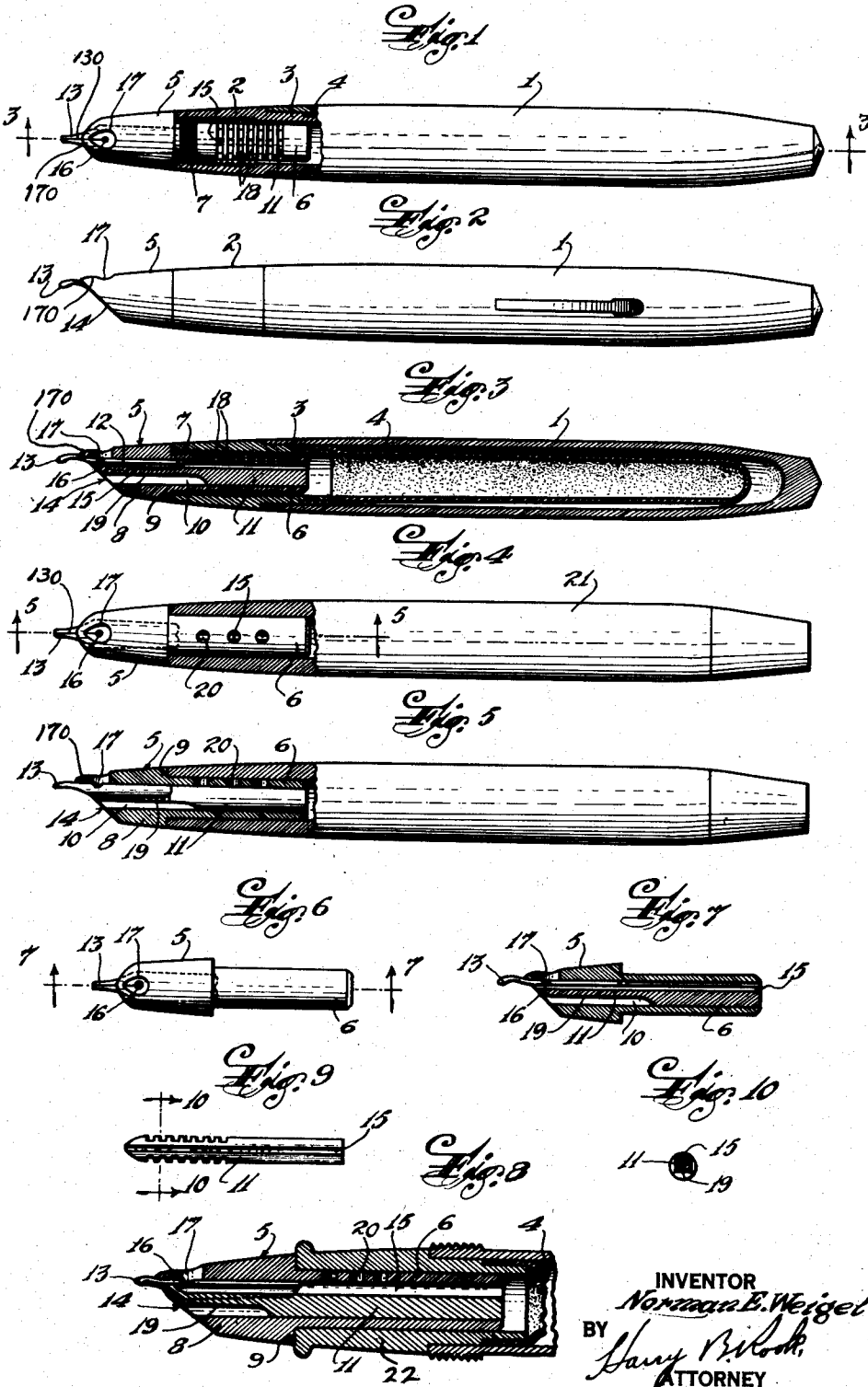
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FOUNTAIN PEN

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## FOUNTAIN PEN

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This invention relates in general to fountain pens and particularly to the ink feed, the pen point and means for mounting the latter.

The use of gold in pen points or nibs is highly desirable because of its non-corrosive character and its softness and flexibility which contribute to ease of writing. Because of its high cost and the present restrictions upon its use due to the war, it is necessary that a minimum weight of gold consistent with satisfactory operation be used in pen points, particularly for low cost fountain pens.

In my United States Patent No. 1,989,220, dated January 29, 1935, I described and claimed a gold nib, or pen, of high carat content but of finer or thinner gauge than present day nibs of corresponding size, so that the amount or weight of gold therein is appreciably smaller as compared with the usual gold nibs, combined with novel nib reinforcing means comprising a metal frame for preventing the nib from buckling or unduly flexing under writing pressure.

However, it is now desirable if not necessary to further reduce the amount of gold alloy and also the amount of any other metals, used in constructing pen nibs, and therefore one object of my invention is to provide a pen nib that shall be much smaller and contain less metal than pen nibs of the past, in combination with novel and improved means formed of plastic material to take the place of the metal reinforcing frame shown in my aforesaid patent, for reinforcing the nib during writing operations and preventing buckling or undue flexing thereof under writing pressure.

Making the nib smaller gives rise to new problems in the feeding of ink to the nib, particularly in preventing squirting or excessively rapid flow of the ink, while at the same time maintaining sufficient ink at all times at the point to permit beginning of writing without shaking the pen or waiting for the ink to run from the ink reservoir in the barrel of the fountain pen.

Therefore further objects of my invention are to provide in a fountain pen of the character described novel and improved means for ensuring adequate and constant supply of ink to the pen nib and for preventing excessively rapid flow and leakage of the ink at the nib; and thus to provide a novel and improved construction whereby small auxiliary reservoirs of ink shall be maintained at all times in close proximity to the pen nib, and excessive quantities of ink shall be trapped and prevented from escaping at the nib.

Other objects, advantages and results of the invention will be brought out by the following description in conjunction with the accompanying drawing in which

Figure 1 is a top plan view of a fountain pen embodying my invention with portions of the pen casing broken away and shown in section.

Figure 2 is a side elevational view thereof.

Figure 3 is a vertical longitudinal sectional view through the fountain pen on the line 3—3 of Figure 1.

Figure 4 is a similar view to Figure 1 showing a modification of the invention.

Figure 5 is a side elevational view of the pen shown in Figure 4 with portions shown in vertical longitudinal section on the line 5—5 of Figure 4.

Figure 6 is a top plan view of the nib holding and ink-feed section of the pen showing modifications of the invention.

Figure 7 is a vertical longitudinal sectional view on the line 7—7 of Figure 6.

Figure 8 is a fragmentary enlarged vertical longitudinal sectional view similar to Figure 5 showing the invention applied to a known type of fountain pen.

Figure 9 is a top plan view of the ink-feed bar, and

Figure 10 is a transverse vertical sectional view on the line 10—10 of Figure 9.

Specifically describing the embodiment of the invention illustrated in Figures 1 to 3 inclusive, the reference character 1 designates the pen barrel in one end of which is fitted in the usual manner, a tubular section 2 which has an extension 3 within the barrel to which the ink sac 4 is connected to serve as an ink reservoir.

Within the other end of the section 2 is fitted a combined nib-holding and ink-feeding unit 5.

As shown the unit 5 comprises a body part having a shank 6 screw-threaded at 7 into the section 2 and having a head or tip 8 at the inner end of which is a shoulder 9 that abuts the end of the section 2. An opening 10 extends longitudinally through the body part, in which is fitted an ink-feeding bar 11 between which and the walls of the opening 10 is secured a pen nib 12 which has a writing point 13 that has the usual longitudinal slit 130.

The barrel 1 and section 2 may be formed of suitable material, preferably a plastic as usual; and the body part and feed bar of the unit 5 preferably are formed of plastic material.

The nib preferably is formed of an alloy of

gold and is much smaller and contains less metal than heretofore known pen nibs, even that disclosed in my aforesaid patent. Also, the nib is of substantially thinner gauge than pen nibs of the prior art so that the nib is inherently incapable of withstanding writing pressure.

In accordance with the invention the major portion of the nib is clamped between the feed bar 11 and the walls of the opening 10 in the tip 8 so as to leave only the extremity of the writing point 13 of the nib projecting from the tip as shown in Figures 1 and 3. In other words, a portion of the tip overlies substantially the whole of the pen nib in contact therewith so that the latter is reinforced and prevented from buckling or unduly flexing under writing pressure. To provide clearance at the underside of the pen nib for writing operations, i. e., to prevent contact of the tip 8 with the surface being inscribed with the pen, the outer extremity of the tip is beveled as indicated at 14. More specifically the tip 8 is frusto-conical and coaxial with the barrel 1, with the plane of the end 14 inclined to the axis of the tip.

To ensure proper supply of ink from the reservoir 4 to the pen nib, the feed bar 11 has a longitudinal ink feed groove 15 that communicates at one end with the reservoir and at the other end with the usual hole 16 in the pen nib at the base of the slit 130 in the writing point of the nib; and the portion of the tip 8 that overlies the pen nib has an opening 17 that registers with the opening 16 to act as a breather for facilitating flow of ink through the channel 15. This opening forms in effect a cross bar 170 that traverses and contacts with the top surface of the nib between the hole 16 and the extremity of the writing point.

Should ink flow too rapidly or in excessive quantity through the channel 15, the ink will pass through the slit in the writing point into contact with the underside of the bar 170 which by surface attraction will cause quick spreading of the ink and accumulation thereof in the hole 17 which thus serves as a trap, thereby preventing squirting or leakage of the ink at the nib.

During writing operations a quantity of ink will accumulate in the opening 17 and form an auxiliary ink reservoir to ensure constantly adequate ink at the nib point for beginning writing operations without shaking of the pen to start flow of the ink.

It is also desirable to provide another auxiliary reservoir to constantly maintain adequate amount of ink at the writing point, and as shown the shank 6 of the body part of the unit 5 has a plurality of transverse slots 18 which establish communication between the reservoir 4 and the groove 15. Ink will accumulate in these slots so as to be ready to flow quickly upon starting of writing operations.

Also, preferably the underside of the feed bar 10 is cut away as at 19 to provide another auxiliary reservoir or trap between the said bar and the body part of the unit 5.

In addition to ensuring adequate supply of ink to the pen nib, the slots 18 and the reservoir formed by the cut away portion 19, will serve as traps to prevent squirting or excessive rapid flow of ink to the pen nib.

This structure will avoid the necessity of the

special caps now utilized for fountain pens to prevent leakage of ink from the pen point into the pocket or container in which the pen may be carried.

In Figures 5 and 6 I have shown the shank 6 of the body part of the unit 5 formed with a plurality of circular openings 20 instead of the slots 18, to serve as auxiliary reservoirs.

As shown in Figures 6 and 7 the auxiliary reservoirs like 18 and 20 may be omitted, the shank 6 being devoid of lateral openings.

In Figures 1 to 3 inclusive I have shown the combined pen holding and ink feeding unit 5 used in conjunction with a section 2 of special shape, while Figure 8 shows the tip applied to a regular section 22 such as commonly found in fountain pens; but if desired the unit 5 may be used in fountain pens that do not include such sections, for example as shown in Figures 4 and 5 where the unit is illustrated as directly fitted into the end of the fountain pen barrel 21. This type of structure is generally found in pens that have pumping mechanisms for drawing ink directly into the barrel, as distinguished from pens having rubber sacs for containing the ink.

In Figures 1 to 3 inclusive I have shown the unit 5 screw threaded into the section 2, but obviously the unit may be frictionally fitted and adhesively secured in the section or pen barrel as shown in Figures 4 and 5.

While I have described the preferred and other embodiments of my invention, it will be understood that many modifications and changes in the details of structure of my invention may be made by those skilled in the art without departing from the spirit or scope of the invention.

What I claim is:

1. A fountain pen including a barrel having an ink reservoir, and a nib-holding and ink-feeding unit comprising a body part secured in one end of said barrel and having an opening therethrough communicating with said reservoir, an ink feed bar fitted in said opening, a pen nib secured between the walls of said opening and said feed bar and having a writing point with a longitudinal slit, there being an ink feed channel leading from said reservoir to said slit, and said body part having a portion in overlying contact with said writing point and provided with an opening to receive and hold ink from said slit.

2. A fountain pen including a barrel having a reservoir, a nib-holding and ink-feeding unit comprising a body part secured in said barrel and having a longitudinal opening therethrough communicating with said reservoir, an ink feed bar fitted in said opening, a nib having a writing point with a longitudinal slit, said nib being secured between said feed bar and the walls of said opening with the extremity of said writing point projecting from said body part so that the major portion of said writing point is overlaid by and in contact with a portion of said body part whereby said writing point is reinforced against buckling under writing pressure, there being an ink feed channel leading from said reservoir to said slit in said nib, and said portion of the body part that overlies said writing point of the nib having an opening communicating with said slit in the nib and with the atmosphere.

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