Oct. 4, 1949. R. T. WING 2,483,603

FOUNTAIN PEN NIB

Filed March 18, 1946

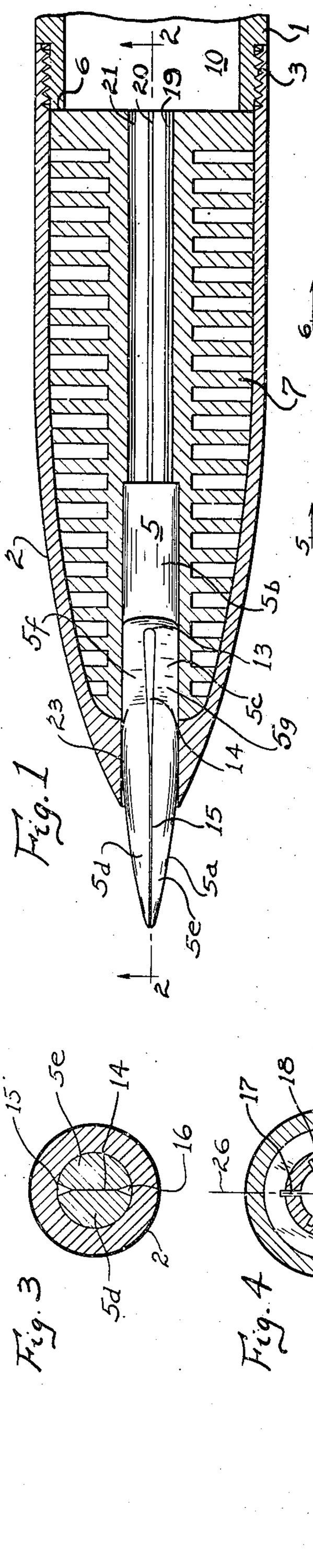

Fig. 1

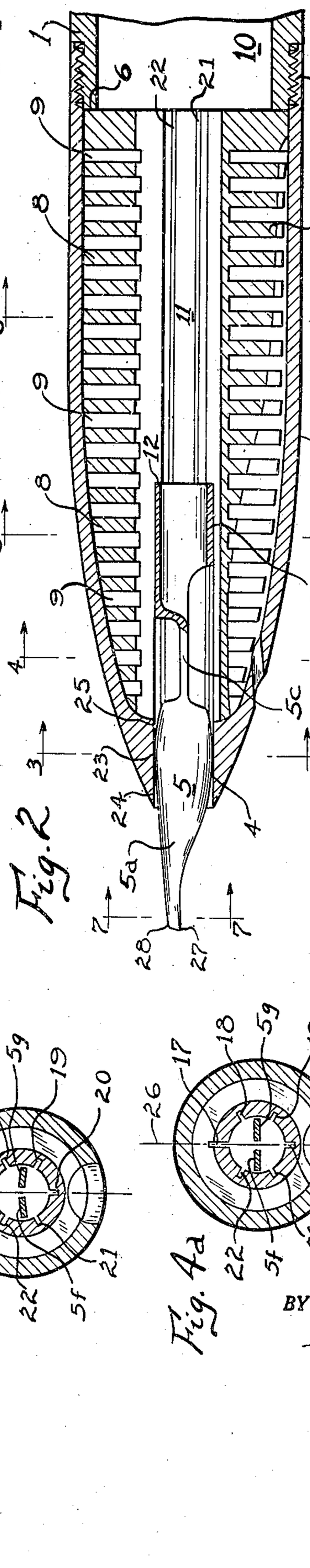

Fig. 2

Fig. 3

Fig. 4

Fig. 4a

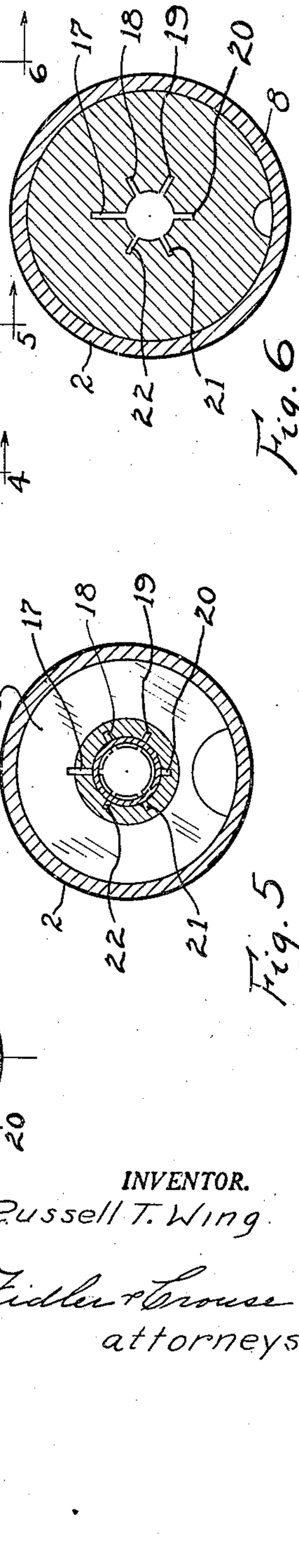

Fig. 6

Fig. 5

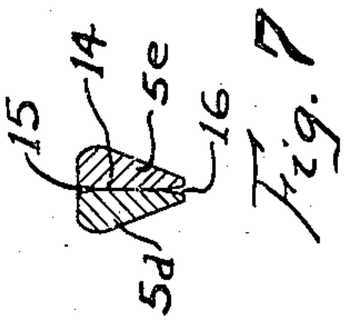

Fig. 7

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FOUNTAIN PEN NIB

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8 Claims. (Cl. 120—51)

1

This invention relates to fountain pens and has to do particularly with a novel pen nib entailing certain improved characteristics and advantages; and, further, has to do with the combination of such a nib with a novel fountain pen construction.

One of the objects of my invention is to provide a fountain pen nib which is flexible or yieldable to the touch and at the same time is suitable for use with very free-flowing ink which is practically useable only in fountain pens having nibs which do not spread materially in use and which, as an inherent incident to their non-spreading characteristics, have, heretofore, been quite stiff and unyielding to the touch.

Many people prefer to write with a pen nib which is more or less yieldable as it is pressed against the writing surface; but a conventional nib which is yieldable spreads at the slit, thus widening the capillary passageway in the nib through which ink is fed to the writing surface; and such widening of the slit is not feasible with the very free-flowing ink previously referred to because it would result in feeding out too much ink. That kind of ink, however, is greatly to be desired because it is quick drying and color fast. The present invention provides a fountain pen nib which is flexible and yet may be so constructed that the slit does not widen in response to writing pressure.

Another object of my invention is to provide a pen nib which is very rugged while at the same time being flexible.

A further object is to provide a fountain pen nib which is well adapted for use as a ruling pen.

Still another object is to provide a flexible fountain pen nib which may be made either spreading or non-spreading as desired, without altering the external dimensions—thus making it practicable to substitute, in a fountain pen, a spreading nib in place of a non-spreading nib and vice versa.

An additional object is to provide a fountain pen and nib construction wherein the nib is flexible, but definitely limited as to extent of flexible yield, so that considerable pressure can be applied to the nib, as in making carbon copies, without doing any damage to the nib.

Another object is to provide a fountain pen nib having two writing contact surfaces at the point

2

which provide, in effect, a fine point and a coarse point which may be used, alternatively, as the user may elect.

Other objects and advantages of my invention will be apparent from the following detailed description.

In the drawing which accompanies this specification:

Figure 1 is a longitudinal sectional view through the front end portion of a fountain pen, including a top side elevational view of my new pen nib;

Fig. 2 is a longitudinal sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a transverse sectional view taken along line 4—4 of Fig. 2, illustrating a constructional detail of a nib which is intended to spread at the point in response to writing pressure;

Fig. 4*a* is a view similar to Fig. 4 only showing a slightly different nib;

Fig. 5 is a transverse sectional view taken along line 5—5 of Fig. 2;

Fig. 6 is a transverse sectional view taken along line 6—6 of Fig. 2; and

Fig. 7 is a transverse sectional view taken along line 7—7 of Fig. 2.

The fountain pen illustrated includes a barrel comprising a rear portion 1, shown fragmentarily, and a front portion 2 which is connected to portion 1 by means of a threaded joint 3. The portion 2 of the barrel is often referred to as a shell and it has an axial bore 4 at its forward end which is dimensioned to fit closely, but not tightly, a novel pen point, generally indicated by the numeral 5.

Fitted within the shell 2 and held in place by a shoulder 6 formed by the front end of barrel portion 1 is an overflow governor 7 having a considerable number of radial fins 8 forming, conjointly, a similar number of capillary ink storage cells 9, the function of which is to receive and thereafter feed out any excess ink which may be forced out of the main ink reservoir 10.

The governor 7 has an axial bore 11 connected at its rear end with reservoir 10 and extending from end to end of the governor. Bore 11 is enlarged at its forward end to a diameter equal to that of bore 4, and the enlargement forms a

shoulder at 12 which provides an abutment for the rear end of nib 5.

The pen point is in one piece, and comprises a nib portion 5*a*, a rigid, tubular anchoring portion 5*b*, and an intermediate resilient portion 5*c*. The nib portion is slit lengthwise from the front end to a point 13 near the rear extremity of the resilient portion 5*c*, thus dividing the nib portion into two complementary halves identified, respectively, by reference numerals 5*d* and 5*e*. In Figs. 1 and 3 the lengthwise slit is identified by reference numeral 14. It will be observed that said slit is normally closed throughout nearly the whole length of the nib portion 5*a*, but is widened in the resilient intermediate portion 5*c*—see Fig. 1. Along the upper side of the nib portion 5*a* and extending all the way to the writing end of the nib portion is a V-shaped capillary groove 15; and a similar groove 16 may be provided along the underside of the nib portion, as shown in Fig. 3. Ink is fed to the writing point along said capillary grooves. The slit 14 is not intended primarily as an ink feed channel although it may function as such to some extent.

Cut into the wall of bore 11 and extending throughout the whole length of governor 7 are six narrow grooves marked 17 to 22—see Figs. 4 to 6 inclusive. These are capillary ink feed channels through which ink is fed from reservoir 10 to the pen nib. Groove 17 is cut deeper than the others in order to establish a connection with the capillary cells 9.

The nib portion 5*a* of the pen point 5 is slightly tapered lengthwise so that it contacts the bore 4 only along an annular line 23, encircling the nib portion 5*a*; and a small amount of clearance is provided at 24 and 25 so that the nib portion is free to oscillate in a vertical plane, about a fulcrum point at 23, through a small arc, in response to writing pressure applied to the nib of the pen. Such oscillatory movement is resisted by the resilient intermediate portion 5*c*, which tends at all times to hold the nib portion 5*a* in the centralized position in which it is shown in Fig. 2.

The resilient intermediate portion 5*c* of the pen point 5 comprises two lengthwise extending leaf springs identified by reference numerals 5*f* and 5*g*. These springs are of such cross-sectional configurations and so disposed that the nib portion 5*a* is flexible in a vertical plane, but relatively non-flexible in a horizontal plane. In Figs. 4 and 4*a* I have identified the vertical plane by a line 26.

In some instances it is desirable that the two halves of the nib portion spread apart to some extent in response to writing pressure, and when that is the case the two leaf springs 5*f* and 5*g* are twisted out of the horizontal plane, as shown in Fig. 4, so that each lies at a small angle to the horizontal. The plane in which each of said springs lies, widthwise, is such that when the nib portion is flexed by writing pressure applied to the end thereof, the two halves 5*d* and 5*e* will spread apart at the end. This results in varying the width of the ink line proportionately to the applied pressure, as is the case with any flexible pen nib.

When, on the other hand, the pen is to be used with very free flowing ink it may not be feasible to permit the nib to spread in response to writing pressure, and in that event the two leaf springs should both be disposed in the same plane as shown in Fig. 4*a*. It will be evident that with the springs thus disposed there is no tendency for the nib to spread at the writing point in response to writing pressure.

The preferred cross-sectional configuration of my new nib at a point immediately adjacent the front end thereof, is shown in Fig. 7, from which it will be apparent that the paper-engaging surface at 27 on the lower side of the nib is narrow, whereas the paper-engaging surface at 28 on the upper side of the nib is relatively wide. The nib will operate either as shown in Fig. 2 with surface 27 in contact with the paper or in the reversed position with surface 28 in contact with the paper. By so forming the nib that surface 28 is relatively wide while surface 27 is relatively narrow, it can be made to perform both as a fine point nib and as a broad point nib.

The overflow governor herein partially described operates in accordance with well known principles; but since said governor performs no new function in conjunction with the present invention it is unnecessary to describe it in any further detail.

I claim:

1. The combination in a fountain pen, of a barrel having a bore at its front end, and a pen point comprising a substantially rigid nib portion and an anchoring portion, said anchoring portion snugly fitting in said bore and resisting relative rotation of the pen point in the bore, said pen point having an intermediate resilient portion connecting the anchoring portion to the nib portion, said nib portion having its outer wall surface shaped to provide circumferential line contact with the wall of said bore thereby to permit limited oscillatory movement of the nib portion in response to writing pressure in a plane perpendicular to the writing surface and against the resistance of said resilient portion.

2. The combination in a fountain pen, of a barrel having a bore at its front end, and a pen point comprising a substantially rigid nib portion and an anchoring portion, said anchoring portion snugly fitting in said bore and preventing relative rotation of the pen point in the bore, said pen point having a resilient intermediate portion connecting the nib portion to the anchoring portion, said nib portion having convex outer surfaces which are in circumferential line contact with the wall of said bore at a point spaced inwardly from the open end of the bore whereby the nib portion is adapted for limited oscillatory movement against the resistance of said resilient intermediate pen portion in a plane perpendicular to the writing surface.

3. The combination in a fountain pen, of a barrel having a bore therein, and a pen point comprising an anchoring portion fitting in said bore and serving to prevent relative rotation of the pen point in the bore, a flat resilient intermediate portion connecting together the anchoring and nip portions of the pen, the outer wall of said nib portion and the wall of said bore being divergent from a circumferential line of mutual contact thereby to permit relative oscillatory movement of the nib portion in response to writing pressure in a plane perpendicular to the writing surface, said flat resilient portion preventing relative oscillatory movement of the nib portion in a direction parallel to the writing surface.

4. The combination in a fountain pen, of a barrel having a bore therein, and a pen point comprising an anchoring portion snugly fitting in said bore to prevent relative rotation of the pen point in the bore, a flat resilient intermediate portion connecting together said nib and anchoring pen

portions, said nib portion being split in a plane perpendicular to the writing surface to provide two nib sections and having convex outer surfaces which are in circumferential line contact with the wall of the bore, thereby to permit limited oscillatory movement of the nib portion about said line contact as a fulcrum against the resistance of said resilient pen portion, the intermediate portions of said nib sections being disposed in the same plane whereby the writing points of the pen nib flex similarly in parallel directions when writing pressure is exerted on the pen point.

5. The combination in a fountain pen, of a barrel having a bore at one end, and a pen point mounted in said bore and comprising an anchoring portion and a relatively rigid nib portion which projects outwardly from the bore, said nib portion being in circumferential line contact with the wall of said bore at a position located inwardly from the open end of the barrel and being shaped to provide clearance between its periphery and the wall of said bore both forwardly and rearwardly of said contact position, whereby the nib portion is free to oscillate in response to writing pressure through a small angle about said line contact as a fulcrum and in a plane perpendicular to the writing surface, said pen point having an intermediate resilient portion connecting the nib portion to the anchoring portion and serving to yieldingly resist oscillatory movement of the nib portion in a vertical plane and to prevent oscillatory movement of the nib portion in a plane parallel to the writing surface, said nib portion having an ink feed channel for feeding ink from the barrel to the writing point of the pen.

6. The combination in a fountain pen, of a barrel having a bore therein, and a pen point mounted in said bore and comprising a nib portion and an anchoring portion connected together by a flattened resilient intermediate portion, said anchoring portion snugly fitting in said bore to prevent relative rotary movement of the pen point in the bore, said bore and nib portion being shaped to provide circumferential line contact between the outer surface of said nib portion and the wall of said bore, thereby permitting limited oscillatory movement of the nib portion in said bore in a plane perpendicular to the writing surface when the pen is subjected to writing pressure, and said nib and resilient portions being slitted lengthwise through the pen point in a plane perpendicular to the writing surface whereby the nib portion is divided into two contiguous sections, and the resilient intermediate portion is divided into two flattened spring elements extending side by side lengthwise of the pen point, each of said spring elements having its greater transverse dimension extending in a plane making a small angle with the plane of the other member and a wide angle with the plane of said slit whereby flexing of the nib portion due to writing pressure

will cause the writing points of the contingous sections thereof to spread along said slit.

7. The combination in a fountain pen, of a barrel having an ink reservoir therein, a governor mounted within the forward end of said barrel and having a longitudinally extending bore therein, a pen point comprising nib and anchoring portions, said anchoring portion fitting in the governor bore and having a flat resilient intermediate portion connecting it to the nib portion of the pen, said nib portion having longitudinally arcuate outer surfaces whereby said nib portion contacts the wall of the governor bore only along a circumferential line of contact lying in a plane perpendicular to the axis of the governor bore and positioned inwardly from the open end of said bore, and the nib portion is free to oscillate about said line contact as a fulcrum in a plane perpendicular to the writing surface against the resistance of said resilient connecting portion, said nib and resilient intermediate pen portions being slit lengthwise thereof, and the nib portion having a capillary ink feed groove therein for conducting ink from the governor to the writing tip thereof.

8. A pen point for fountain pens comprising a substantially rigid anchoring portion, an elongate nib portion formed with a tapered writing tip and having a portion rearwardly of said tapered tip formed with a generally circular cross section and longitudinally arcuate peripheral surfaces whereby said portion has a maximum girth at one point and tapers forwardly and rearwardly from such point of maximum girth, said nib portion being split longitudinally along a plane extending vertically when the point is in normal writing position to provide two nib sections, and a pair of flattened resilient portions connecting said nib sections respectively to said anchoring portion, said connection portions lying in planes making a small angle to each other and a wide angle to said vertical plane, whereby said connecting portions will flex in slightly divergent directions upon the application of writing pressure on said point.

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