

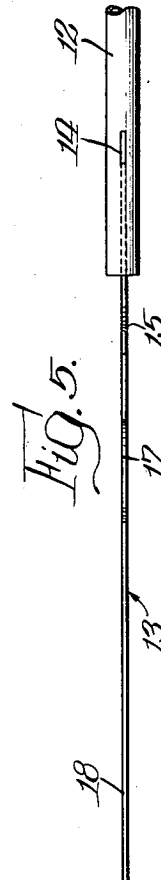
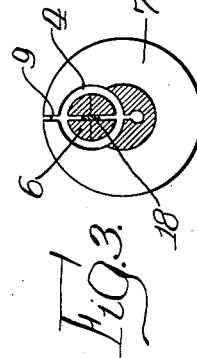
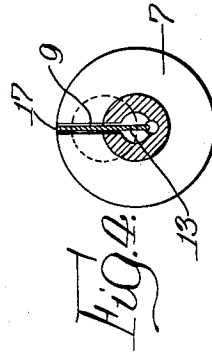
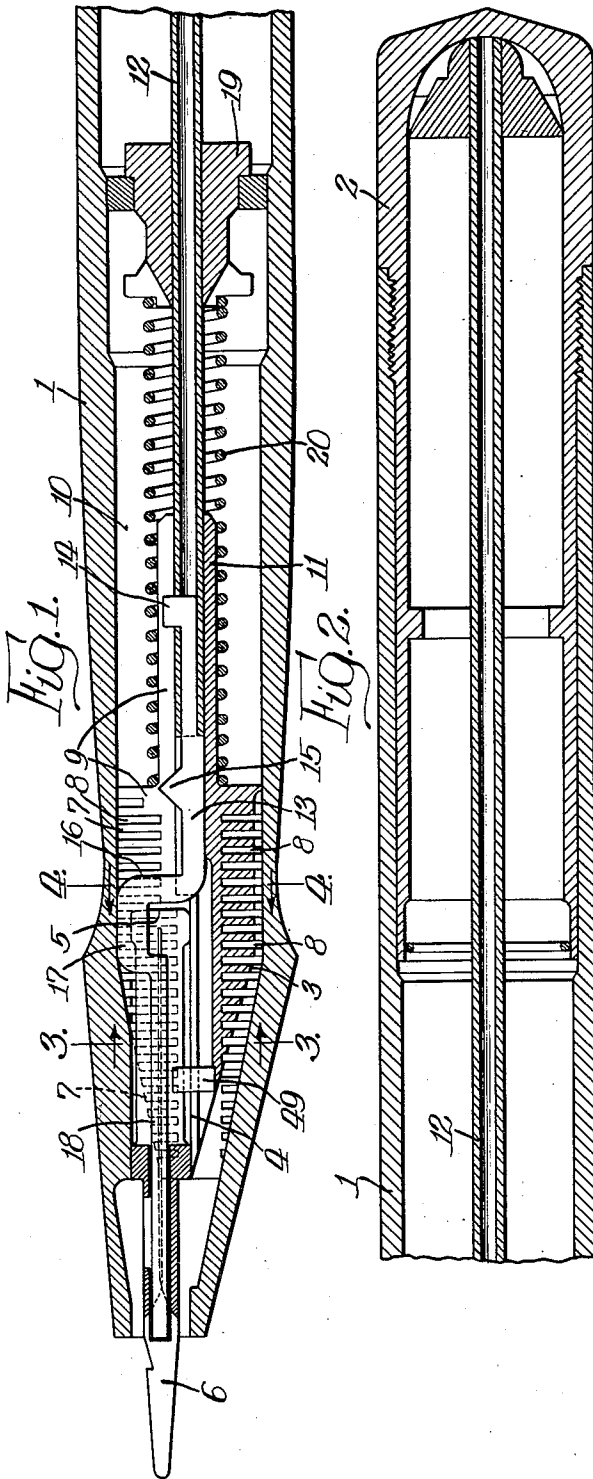
July 8, 1952

R. T. WING
FOUNTAIN PEN NIB

2,602,425

Original Filed March 27, 1946

2 SHEETS—SHEET 1



INVENTOR.
Russell T. Wing,
BY
Fidder, Crouse & Beardsley
Attys.

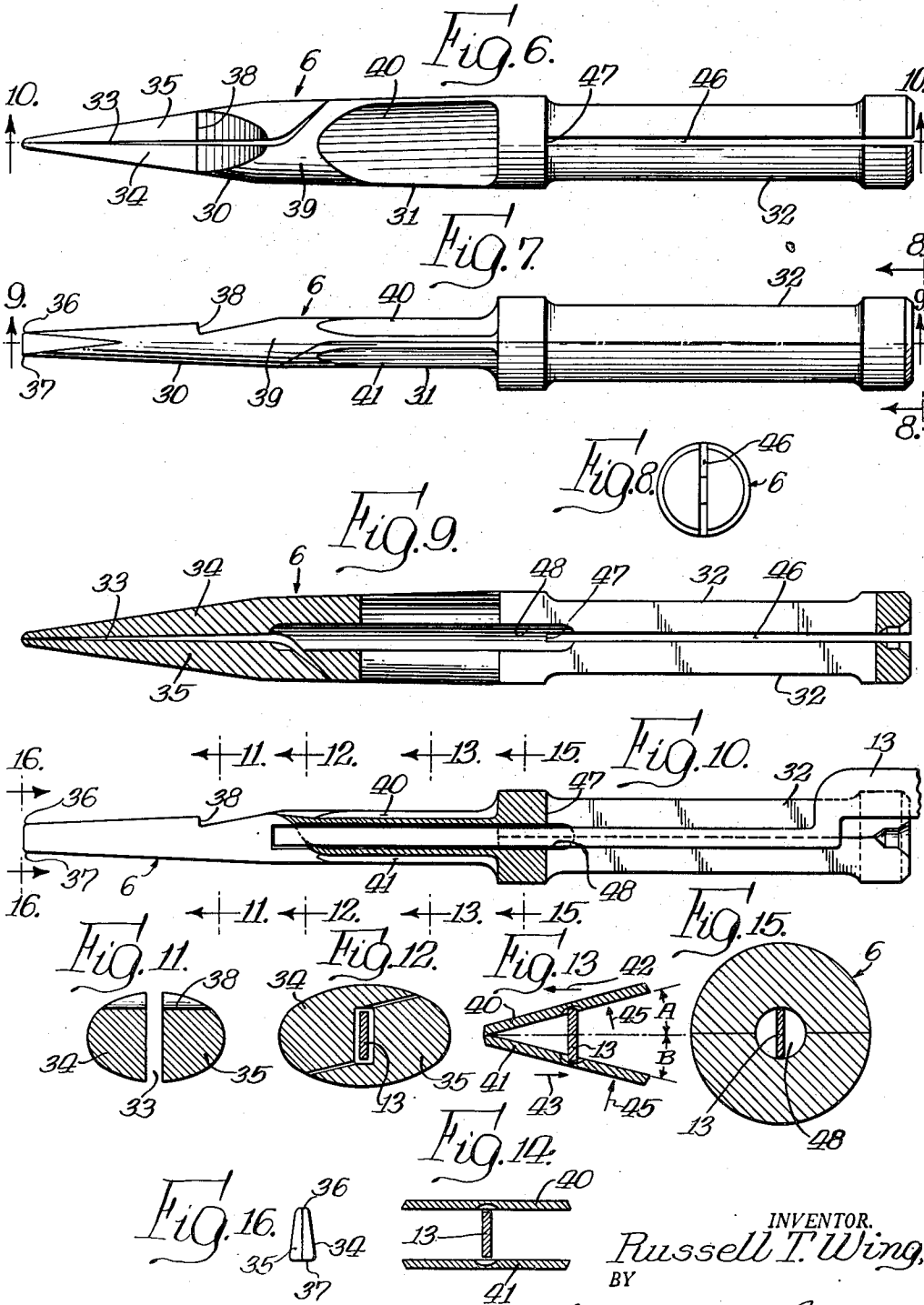
July 8, 1952

R. T. WING
FOUNTAIN PEN NIB

2,602,425

Original Filed March 27, 1946

2 SHEETS—SHEET 2



INVENTOR.
Russell T. Wing

BY

Fidler, Crane & Beardsley
Attys.

UNITED STATES PATENT OFFICE

2,602,425

FOUNTAIN PEN NIB

Russell T. Wing, Excelsior, Minn.

Original application March 27, 1946, Serial No. 657,509. Divided and this application May 13, 1948, Serial No. 26,898

7 Claims. (Cl. 120—109.5)

1

This invention relates to fountain pen nibs and has to do more particularly with a nib for a fountain pen which will operate successfully with India ink and is, therefore, capable of being employed as a drafting pen. It further relates to a novel drafting pen nib and to a pen nib which can be used in place of the drafting nib for writing or lettering.

One of the primary objects of my invention is to provide a nib adapted for use with means effective to obviate or offset the tendency of India ink quickly to clog the capillary feed channel which necessarily is employed in all fountain pens—thus making it possible to provide a fountain pen which will operate successfully with that kind of ink, or with any other ink.

Another object is to provide a nib for a successful fountain ruling pen.

A further object is to provide an improved nib for a fountain ruling pen which can easily be kept in continuous operation for relatively long periods and which also is readily adapted for quick adjustment as to line width.

Still another object is to provide a drafting or ruling pen nib which can be used successfully as a component part of a fountain pen capable of using India ink.

An additional object is to provide a flexible pen nib of small diameter suitable for writing and lettering and which is not disposed to chatter.

Another object is to provide a flexible fountain pen nib which is suitable for writing and lettering and which can be used in my new fountain pen in place of the drafting nib.

This application is a division of my copending application Serial No. 657,509, filed March 27, 1946, now Patent 2,581,740, for Fountain Pen.

I have found that by providing a suitable cleaner element which is mounted in and movable lengthwise of the capillary feed channel, it is possible and practicable to clear said channel whenever it becomes obstructed by reason of the ink congealing or partially congealing therein; and by virtue of such provision I am able to produce a fountain pen which can successfully be used with India ink and the like. In carrying out my invention I prefer to utilize a novel arrangement disclosed and claimed in my aforementioned application which brings about a movement of the cleaner element along the feed channel in response to pressure applied to the end of the pen nib—thus enabling a user to quickly and easily clear the feed channel whenever it becomes clogged. I also prefer, in carrying out my invention, to employ a novel con-

2

struction wherein the cleaner element is utilized for adjusting the drafting pen nib to effect any desired line width within its range. The present application relates particularly to a nib of novel construction especially well adapted for use in a pen of the character disclosed in my aforesaid application.

Other and further objects of my invention will be apparent as the detailed description progresses.

Referring to the drawings:

Figure 1 is an enlarged, longitudinal, sectional view through the forward portion of a fountain pen constructed in accordance with my invention.

Fig. 2 is an enlarged, longitudinal, sectional view of that portion of the pen which is to the rear of that shown in Fig. 1;

Fig. 3 is a transverse sectional view taken along line 3—3 of Fig. 1;

Fig. 4 is a transverse sectional view taken along line 4—4 of Fig. 1;

Fig. 5 is an edgewise detail view of the nib adjusting and cleaner tongue;

Fig. 6 is a plan view of a writing and lettering pen nib adapted for use in the fountain pen of Figs. 1-5;

Fig. 7 is a side elevational view of the same pen nib;

Fig. 8 is a rear endwise view of the same nib, taken at 8—8 of Fig. 7;

Fig. 9 is a longitudinal sectional view taken along line 9—9 of Fig. 7;

Fig. 10 is a longitudinal sectional view taken along line 10—10 of Fig. 6, but with the forward portion of the cleaner tongue of Fig. 7, also shown;

Fig. 11 is a transverse section taken along the line 11—11 of Fig. 10;

Fig. 12 is a transverse section taken along line 12—12 of Fig. 10;

Fig. 13 is a transverse section taken along line 13—13 of Fig. 10;

Fig. 14 is a transverse section taken along line 13—13 of Fig. 10, but illustrating a modification wherein the leaf springs of the resilient portion of the nib are disposed in parallel in the horizontal plane;

Fig. 15 is a transverse section taken along line 15—15 of Fig. 10; and

Fig. 16 is an endwise view taken along line 16—16 of Fig. 10.

The pen structure of Fig. 1 comprises an elongated barrel 1, into the rear end of which is screwed a cup-like piston 2 (see Fig. 2). Mounted in the forward end of the barrel 1 and normally assuming the position in which it is shown in

Fig. 1 is an overflow governor and feed element 3 having a lengthwise bore 4 extending from the front end thereof to the point 5 and proportioned to receive snugly the shank of a pen nib 6, which is shown in detail in Figs. 6-16, inclusive.

The governor 3 has a considerable number of radial fins 7 spaced apart to form intervening narrow capillary cells 8 which constitute, jointly, an auxiliary reservoir for the reception and storage of ink which may be forced out of the main reservoir in excess of what is required for writing—said cells being operative, when filled, to feed out the stored ink to the nib. Extending from end to end of the governor on the upper side thereof, as viewed in Fig. 2, is a narrow radial slot 9, which functions as a capillary conduit through which ink from the reservoir 10 is conveyed to nib 6 and also to the capillary cells 8. The governor 3 has a rearwardly extending shank 11 which is bored axially to receive a breather tube or fill stem 12, the front end of which is slidably telescoped in said bore. Projecting forwardly from the tube 12 and anchored thereto is a sheet metal tongue 13 (shown edgewise in Fig. 5) which is secured to tube 12 by means of a laterally extending lug 14 which projects through an opening in the wall of said tube. This lug also serves to break up any obstruction due to congealed ink or foreign matter in that part of the slot 9 which extends along the shank 11. Another lug 15 projecting laterally from the tongue 13 also functions to break up obstructions in the slot 9. The tongue 13 has a laterally extending portion 16 which is designed to enter a slot 46 (see Fig. 6) in the shank of the pen nib and is effective to break up obstructions therein when the pen nib is moved rearwardly as hereinafter described. The tongue 13 also has a portion 17 which lies in slot 9 above the shank of the pen nib and serves to break up obstructions in the slot 9 near the open edge thereof and further includes a long, narrow portion 18 which lies within the pen nib and extends lengthwise thereof. This latter portion serves to break up obstructions inside the pen nib. It may also serve to effect line width adjustments of a drafting nib, when such a nib is used with the pen, as disclosed and claimed in the parent application referred to, namely, Ser. No. 657,509.

The breather tube or fill stem 12 extends all the way to the rear of the pen (see Fig. 2), and normally abuts the inside of the end wall of piston 2. A valve 19 is fixedly mounted on tube 12 and forms an abutment for a helical spring 20 which, in turn, presses forwardly against governor 3.

The valve 19 forms a part of the subject matter of my copending application, Serial No. 655,077, filed March 18, 1946, now Patent No. 2,509,465. It has no essential significance so far as the present invention is concerned, although it is used in conjunction therewith.

As previously stated, the fountain pen of the present invention is designed primarily for use with India ink which has a distinct tendency to congeal rather quickly and, for that reason, is indisposed to continue to flow freely and continuously in a channel of capillary dimensions. To meet that situation, the pen of Figs. 1 to 5 is so designed that by pressing inwardly on the nib, the latter is caused to recede, together with governor 3. During this operation the cleaner tongue 13 remains stationary, while the governor and nib move relatively thereto. The rearward movement of the governor is opposed by a spring 20 which is suitably seated and which operates to

return the governor and nib to normal position as soon as the retractive pressure on the nib is removed. The backward and forward movement of the governor and nib relatively to the stationary cleaner tongue serves to stir up the partially congealed ink in the capillary feed channels of both the governor and the nib and this causes the ink again to flow. In using the pen the operator from time to time, as required, presses the end of the nib against some convenient firm surface.

The nib 6 is depicted in detail in Figs. 6 to 16 and will now be described. But before entering upon such description, it should be explained that this is a writing or lettering nib and not a drafting nib, and that the primary underlying object is to provide a pen of very small dimensions laterally, which will write without chattering and which will spread at the point (if shading is desired) and which is rugged enough to withstand being pressed into the barrel without suffering impairment, and is adapted to accommodate the cleaner tongue.

For purposes of description, nib 6 may conveniently be considered as comprising three major parts, namely: a front portion 30, a resilient intermediate portion 31 and a rigid shank portion 32. Fig. 6 is a view looking downwardly on the nib, as it is held when writing; and it will be seen from inspection of this view and of the sectional view, Fig. 11, that the front portion 30 has a vertical slit 33 which divides said front portion symmetrically and constitutes an ink feed channel. The two times or blades 34 and 35 which result from slitting the front portion are of solid cross-section, as shown in Fig. 11. Said blades are preferably formed at their ends as shown in Fig. 16, from which it will be seen that there is a narrow contact surface or writing point at 36 and a relatively broad contact surface at 37. The blades are so formed in order to provide a fine writing point at 36 and a broad writing point at 37. However, it is not essential that this feature be retained. That is to say, the end of the nib could, if desired, be so formed as to provide two identical writing points.

The notch 38 is provided merely to facilitate obtaining of a firm hold on the nib for withdrawing it from the governor.

In use it is generally desirable that the blades 34 and 35 spread apart in response to writing pressure just as an ordinary nib spreads when writing. But if the present nib, being very small laterally (the shank is about one-sixteenth inch maximum diameter), were constructed in the manner of an ordinary pen nib, it would chatter very badly and would for that reason be quite unsatisfactory. To meet that situation, I have provided a resilient intermediate portion 31 which is so constructed that it permits the nib to flex and the blades to spread, and yet is so rigid laterally at the place where rigidity is needed that chattering is avoided. Putting the matter another way, I obtain the effect of a non-chattering broad mid-portion within small dimensional limits. To achieve that end, I twist the nib ninety degrees at the point 39, and I form the two blades at the intermediate portion 31 into flat springs, or the equivalent, as best illustrated in Fig. 13. The two leaf springs 40 and 41 are, respectively, continuations of blades 34 and 35; and said springs are so disposed as to the planes in which they lie, flatwise (see Fig. 13); that they have components of flexure laterally in opposite directions. In other words, when writing pressure

is applied to the end of the nib, spring 40 has a component of flexure in the direction indicated by arrow 42, while spring 41 has a component of flexure in the direction of arrow 43; but the principal components of flexure are in the directions indicated by the arrows 44 and 45—which is to say, nearly vertical. Thus, springs 40 and 41 will yield to writing pressure and produce a desirable degree of spreading of the nib at the writing point, yet each of said springs is so wide in the horizontal plane that chattering is avoided, while at the same time the springs are confined within a very constricted area cross-sectionally. This results from the fact that the springs are positioned one above the other—which is made possible by the ninety degree twist at 39.

The flatwise planes of springs 40 and 41 as viewed in Fig. 13 are disposed at angles A and B to the horizontal plane—which angles may be, for example, fifteen degrees each, depending upon the extent to which it is desired that the blades spread apart in response to writing pressure. Angles A and B may be anything from zero, as shown in Fig. 14, to say forty-five degrees. If said angles are of zero magnitude, the blades will not spread in response to writing pressure. On the other hand, if said angles are too large, there may be a tendency for the pen to chatter. Moreover, by making said angles larger, the widthwise dimension of the springs is incidentally decreased, if the over-all diameter of the nib is to be kept within a specified limit, and that, of course, would tend to detract from the non-chattering characteristic of the nib. Generally speaking, angles A and B of fifteen degrees each, or somewhat less, are satisfactory when it is desired to produce a nib which will spread; but there is nothing particularly critical about that angular value. If it is desired merely to realize flexibility without any spreading at the point of the nib, the springs 40 and 41 may be disposed one above the other in parallel horizontal planes as depicted in Fig. 14.

The cross-sectional view of Fig. 12 is taken at a point where blades 34 and 35 are undergoing twist. From that point rearwardly the blades gradually change in cross-sectional configuration until they assume the rectangular form of springs 40 and 41.

The shank 32 of the nib has a lengthwise slot 46 for accommodation of the cleaner tongue 13. And said slot extends forwardly to the point 47 where it connects with an axial bore 43 which is of sufficient size, cross-sectionally, at all points to clear the cleaner tongue. In each of the cross-sectional views of Figs. 12, 13 and 14, cleaner tongue 13 is shown.

It is to be noted that when using the nib of Figs. 6 to 16, tongue 13 does not function to spread the blades of the nib except as an incident to clearing obstructions.

Nib 6 is prevented from rotating by means of a pin 49 which is secured in the governor and is flattened to enter slot 46.

Movement of tongue 13 may be utilized to effect adjustment of a drafting nib, when a drafting nib is used in the pen, by partially unscrewing piston 2—see Fig. 2, as disclosed and claimed in the parent application referred to, namely Serial No. 657,509. Tube 12 is thus caused to recede under the pressure exerted by spring 20, and this effects a corresponding retraction of tongue 13.

In referring to the "vertical plane" as respects the pen nib of Figs. 6-16, I mean the plane along which Fig. 10 is taken; and in referring to the

"horizontal plane" I mean the plane along which Fig. 9 is taken.

I claim:

1. A pen nib comprising a hollow shank, a writing portion formed with a vertical slit defining two horizontally adjacent substantially parallel and relatively rigid nib sections, and connecting portions integral with said shank and respectively with said nib sections, each formed as a relatively flat, flexible spring element of substantially less thickness and greater flexibility than the corresponding nib sections and disposed one above the other in planes extending at not more than forty-five degrees to the horizontal.

2. A pen nib comprising a rigid forward portion, a rigid shank portion, and a resilient intermediate portion interconnecting said forward portion and shank portion, said forward portion being slit lengthwise in the vertical plane to form two laterally adjacent substantially parallel complementary blades, said intermediate portion comprising two lengthwise extending flexible leaf springs disposed one above the other, said springs each being relatively wide and thin in transverse section and substantially thinner and more flexible than the corresponding nib section, the widthwise dimension of each said spring, as viewed in transverse section being substantially equal to that of said shank and each said spring being coincident with a plane which makes an angle of not more than forty-five degrees with the horizontal plane, said springs being each a continuation of one of said blades, respectively.

3. A pen nib comprising a rigid forward portion, a rigid shank portion, and an intermediate portion which is resilient in the vertical plane and rigid in the horizontal plane, said forward portion being slit lengthwise in the vertical plane to form two laterally adjacent complementary blades, said intermediate portion comprising two lengthwise extending leaf springs disposed one above the other, said springs each being relatively wide and thin in transverse section, the widthwise dimension of each said springs, as viewed in transverse section, being at least approximately coincident with the horizontal plane, said springs being each a continuation of one of said blades, individually, said nib having a twist of approximately ninety degrees about its longitudinal axis at the rear end of said forward portion and forwardly of said intermediate portion.

4. A pen nib comprising a rigid forward portion, a rigid shank portion, and an intermediate portion which is resilient in the vertical plane and relatively rigid in the horizontal plane, said forward portion being slit lengthwise in the vertical plane to form two laterally adjacent complementary blades, said intermediate portion comprising two lengthwise extending leaf springs disposed one above the other, each being relatively wide and thin in transverse section, each of said springs, as viewed in transverse section, being disposed, widthwise, in a plane extending at a small angle to the horizontal plane, the said planes of the respective springs being non-parallel and so chosen that flexing of said intermediate portion in the vertical plane will cause said blades to spread at the writing point, said springs being each a continuation of one of said blades, individually.

5. A pen nib comprising a rigid forward portion, an elongate rigid shank portion, and an in-

7

intermediate portion, said forward portion being slit lengthwise in the vertical plane to form two laterally adjacent complementary blades, said intermediate portion comprising two lengthwise extending leaf springs disposed one above the other, said springs each being relatively wide and thin in transverse section, said springs being so disposed that the intermediate portion is rigid against bending in a generally horizontal plane and flexible for bending in a generally vertical plane, said springs being each a continuation of one of said blades, individually, said nib having an axial passageway extending from the rear end thereof and connecting with the slit in said forward portion, said passageway being adapted to accommodate a cleaner tongue.

6. A pen nib comprising a rigid forward portion, a rigid shank portion and a resilient intermediate portion, said forward portion being slit lengthwise in the vertical plane to form two parallel complementary blades, said intermediate portion comprising two lengthwise extending leaf springs disposed one above the other, said springs constituting continuations of said blades, individually, said nib having a twist of ninety degrees at the juncture between said forward portion and said intermediate portion so that the flatwise plane of each spring is at least approximately ninety degrees displaced with respect to the plane of the slit between said blades.

7. A pen nib comprising a rigid forward por-

8

tion, a rigid shank portion and a resilient intermediate portion, said forward portion being slit lengthwise in the vertical plane to form two parallel complementary blades, said intermediate portion comprising two lengthwise extending leaf springs disposed one above the other, said springs constituting continuations of said blades, respectively, said nib having a twist of ninety degrees at the juncture between said forward portion and said intermediate portion, said springs lying flatwise in intersecting planes, the flatwise planes of said springs being each at a small angle to the horizontal plane, said planes being so directed that writing pressure applied to said nib will cause said blades to spread at the point.

RUSSELL T. WING.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
25 209,722	Soennecken	Nov. 5, 1878
818,258	Kepner	Apr. 17, 1906
1,284,525	Wing	Nov. 12, 1918
1,374,426	Burkhardt	Apr. 12, 1921
1,571,565	Wedekind	Feb. 2, 1926
30 2,360,297	Wing	Oct. 10, 1944