April 26, 1966 L. P. BASHAM 3,247,828

FOUNTAIN PEN FOR MUSICAL MANUSCRIPTS

Filed June 4, 1965 3 Sheets-Sheet 1

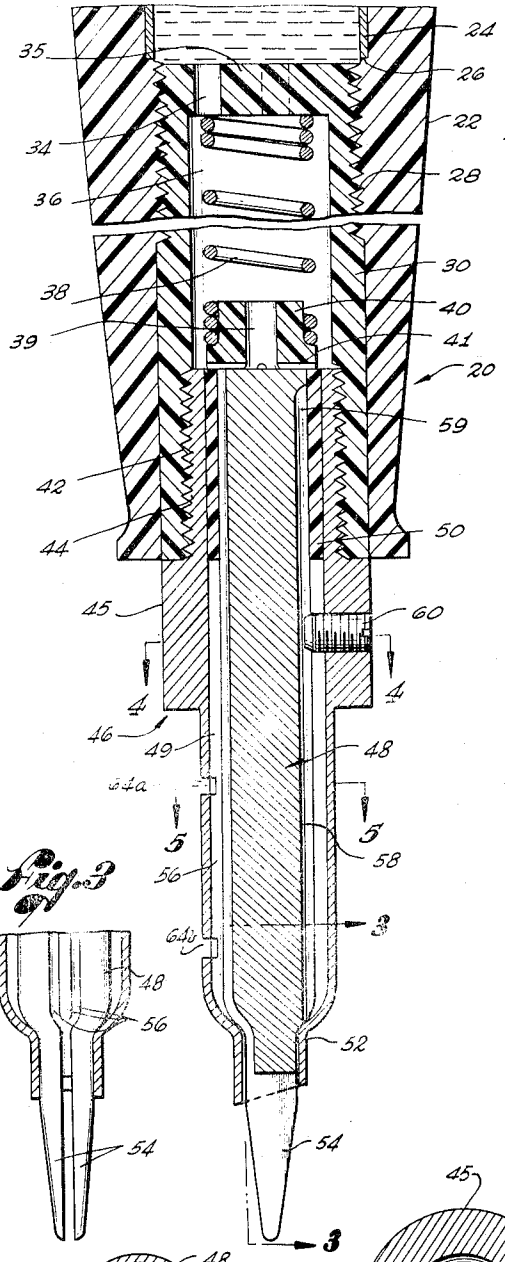

Fig. 1

Fig. 2

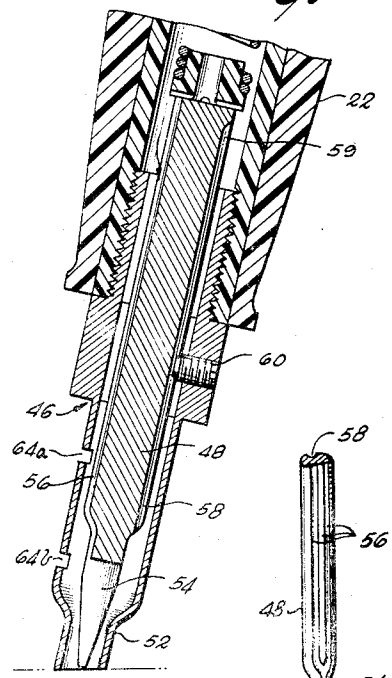

Fig. 3

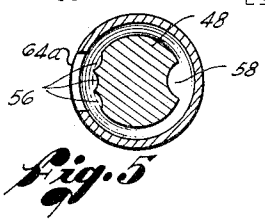

Fig. 5

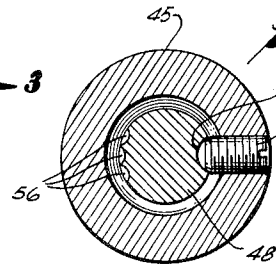

Fig. 4

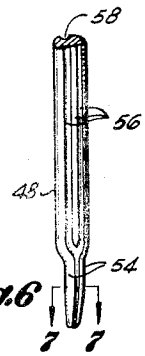

Fig. 6

Fig. 7

INVENTOR.
LLOYD P. BASHAM
BY Zuhwider, Patton, Rieber, Lee, and Utecht
ATTORNEYS

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FOUNTAIN PEN FOR MUSICAL MANUSCRIPTS

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Fig. 17

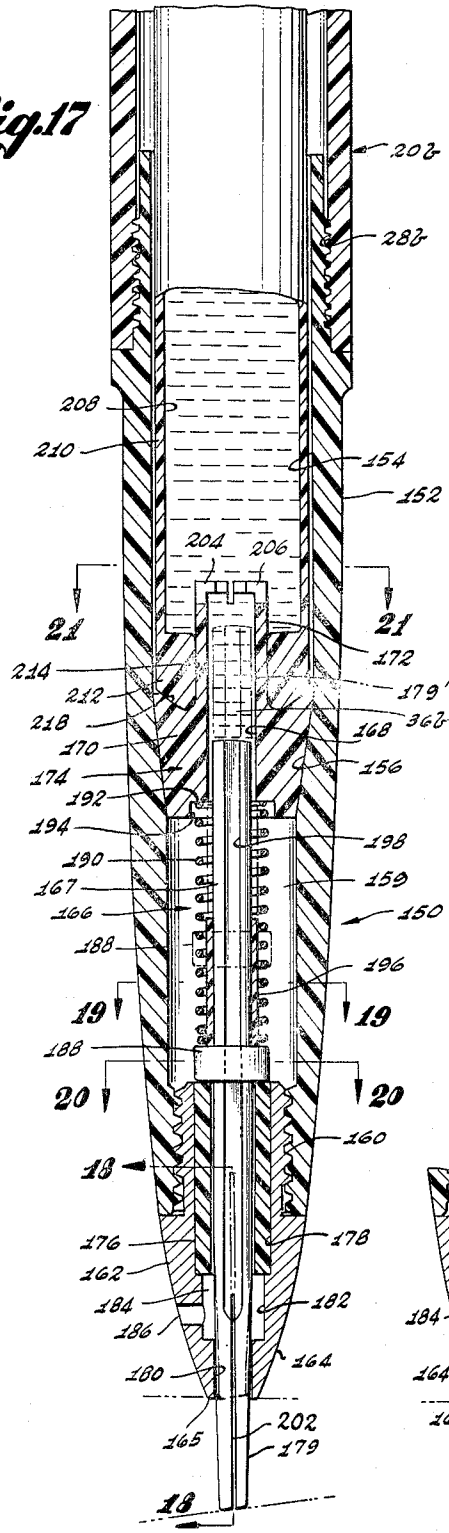


Fig. 19

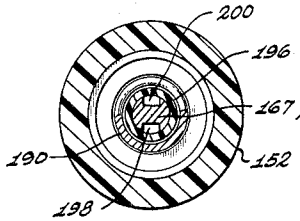


Fig. 20

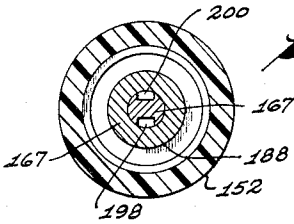


Fig. 21

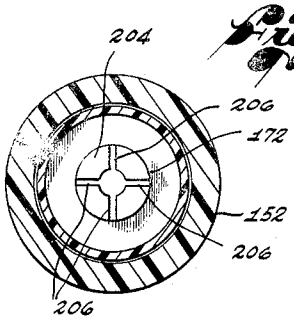
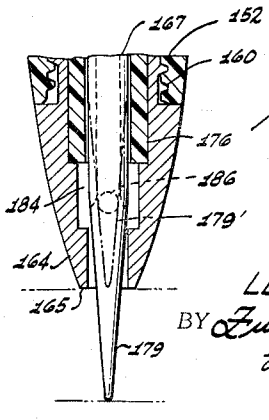


Fig. 18



INVENTOR.
LLOYD P. BASHAM
BY Fulwider, Patton, Rieber, Lee, and Utecht
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Fig. 8

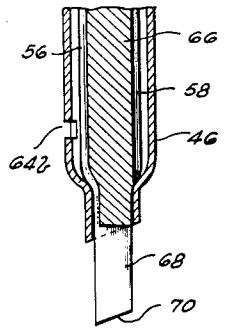


Fig. 9

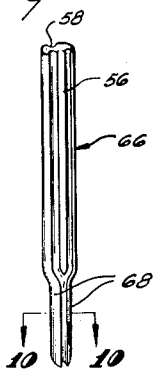


Fig. 10

Fig. 12

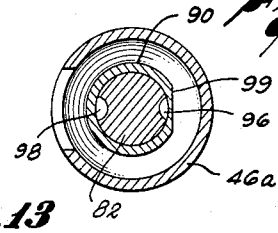


Fig. 11

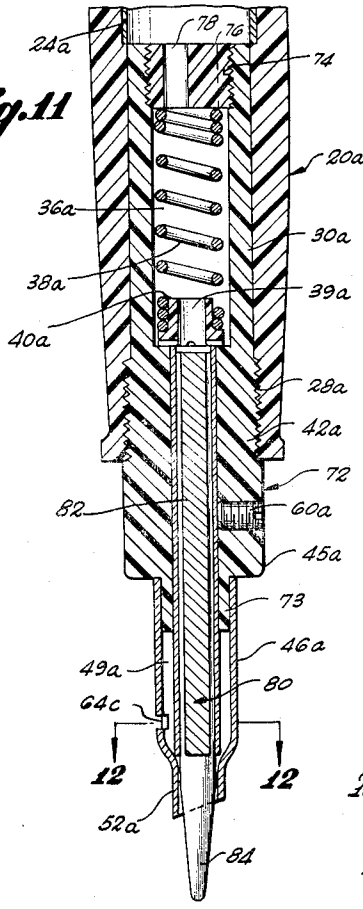


Fig. 13

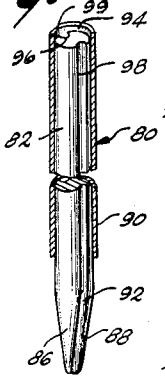


Fig. 14

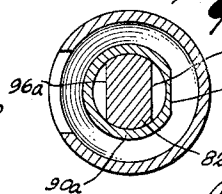


Fig. 15

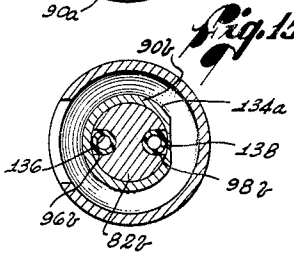
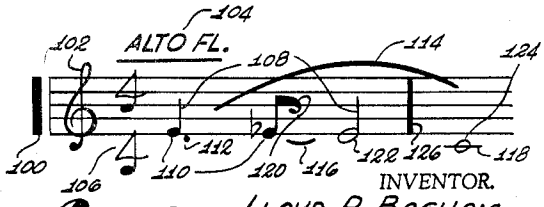


Fig. 16



INVENTOR.
LLOYD P. BASHAM
BY Fulwider, Patton, Rieber, Lee, and Utecht
ATTORNEYS

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FOUNTAIN PEN FOR MUSICAL MANUSCRIPTS

Lloyd P. Basham, 2745 Carmar Drive,
Los Angeles, Calif.

Filed June 4, 1965, Ser. No. 461,472
27 Claims. (Cl. 120—45.6)

This invention relates generally to fountain pens, and more particularly to a fountain pen which is especially suited for use on musical manuscripts.

This application is a continuation-in-part of copending application Serial No. 225,445 filed September 24, 1962, now abandoned, which was in turn a continuation-in-part of copending application Serial No. 175,582 filed February 26, 1962, now abandoned.

In preparing musical manuscripts, the paper which is used has printed thereon suitably spaced staffs on each page. On the left side of each staff there is sometimes printed the proper clef character or symbol associated therewith. The staffs are otherwise blank so that desired music can be written thereon. As is well known, the notation used is varied and includes different note symbols, rest bars, vertical bars, and double bars for indicating measures and periods, etc., as well as various expressive words and numerals. These notations must be distinctly formed so that the musician will be able to easily read and follow the score.

When ordinary means such as a pencil or pen is used to write music on these staffs, it is difficult and time consuming to form the different characters, symbols, and notations such that they are readily legible and easily read by a musician sitting possibly three or four feet away from the manuscript. For example, a relatively large number of strokes must be used with an ordinary pencil or pen to form each eighth note, quarter note, and half note so that they are immediately and clearly distinguishable from each other by the musician. Thus, the actual writing of music by the usual means heretofore employed can be extremely laborious and time consuming.

Bearing in mind the foregoing, it is accordingly a major object of this invention to provide a writing instrument, which will greatly facilitate the actual writing of musical manuscripts.

Another object of this invention is to provide a pen which is highly versatile and easy to use in writing musical manuscripts.

A further object of the invention is to provide a writing instrument which, by suitable manipulation by the writer, can form characters, symbols, and notations of different widths, markings, and shapes, and with continuous and uniform spread of ink therein.

Briefly and in general terms, the objects of this invention are accomplished by providing a fountain pen type writing instrument, comprising a pen mechanism, which is mountable on the end of and in communication with a hollow body or barrel which constitutes the ink reservoir, and wherein the pen mechanism includes a stylus marking member telescopically slidably mounted in a tubular marking member and arranged such that when the stylus member is in its extended position relative to the tubular member, the stylus constitutes the writing or marking instrumentality, and when the stylus member is depressed retractably into the tubular member until the writing end thereof is flush with the end of the tubular member, the end of the tubular member then constitutes the principal writing instrumentality. The nibs of the writing stylus member and the end of the tubular member are shaped to produce particular and different marking widths and shapes depending upon the direction of movement thereof upon the writing or marking surface. Means are also included for providing the required and proper

flow of ink from the ink supply reservoir to the pen mechanism under the different writing and marking conditions.

The invention will be more fully understood, and these and other objects, advantages, and features of novelty will be evident from the following detailed description of presently preferred embodiments and modes of operations of the invention, taken in connection with the accompanying drawings, in which the same or similar reference characters designate the same or similar parts throughout the several views and in which:

FIGURE 1 is a central, longitudinal sectional view of the lower portion of a fountain pen having a pen structure according to this invention, showing the stylus member in fully extended position at which the nibs of the stylus member constitute the principal writing instrumenality.

FIGURE 2 is a sectional view generally similar to that of FIGURE 1, showing the stylus member in a retracted position at which the lower end of the tubular member housing the stylus member then constitutes the principal writing instrumentality.

FIGURE 3 is a fragmentary longitudinal sectional view taken along the line **3—3** in FIGURE 1.

FIGURE 4 is a cross sectional view taken along the line **4—4**, as indicated in FIGURE 1.

FIGURE 5 is a cross sectional view taken along the line **5—5**, as indicated in FIGURE 1.

FIGURE 6 is a perspective elevational view of the stylus member used in the pen structure.

FIGURE 7 is a cross sectional view taken along the line **7—7**, as indicated in FIGURE 6.

FIGURE 8 is a fragmentary longitudinal sectional view, similar to the lower portion of FIGURE 1, but showing an alternative form of stylus member mounted in the tubular member into which it is retractable.

FIGURE 9 is a perspective elevational view of the alternative form of the stylus member used in the pen structure of FIGURE 8.

FIGURE 10 is a cross sectional view taken along the line **10—10**, as indicated in FIGURE 9.

FIGURE 11 is a longitudinal sectional view similar to that of FIGURE 1, but showing still another alternative form of construction of the pen structure.

FIGURE 12 is a cross sectional view taken along the line **12—12**, as indicated in FIGURE 11.

FIGURE 13 is a perspective elevational view of the stylus member used in the alternative pen structure of FIGURE 11.

FIGURE 14 is a cross sectional view similar to that of FIGURE 12, showing a modification of the stylus member shown in FIGURE 13.

FIGURE 15 is a cross sectional view similar to that of FIGURES 12 and 13, showing another modification of the stylus member.

FIGURE 16 is a drawing of a staff with various musical character, symbol, and notation markings thereon to illustrate the versatile writing capabilities of the invention.

FIGURE 17 is a longitudinal sectional view similar to that of FIGURES 1 and 11, but showing still another modified form of construction of the pen structure.

FIGURE 18 is a fragmentary longitudinal sectional view taken along line **18—18** of FIGURE 17.

FIGURE 19 is a cross sectional view taken along line **19—19** of FIGURE 17.

FIGURE 20 is a cross sectional view taken along line **20—20** of FIGURE 17.

FIGURE 21 is a fragmentary cross sectional view taken along line **21—21** of FIGURE 17.

Referring first primarily to FIGURE 1, the fountain pen, shown generally at **20**, as a hollow tubular body or

barrel 22 of a size comparable with that of a conventional fountain pen, for containing an ink supply in the intermediate or upper portion thereof. For convenience of illustration, an open bottomed cartridge type container of ink, as shown at 24 in FIGURE 1, may be employed for the ink supply. However, other conventional container means for furnishing a supply of ink can be used. For example, instead of the cartridge, the fountain pen 20 may contain the ink directly within the barrel 22 or it may be equipped with a conventional flexible sac or bladder device for carrying the supply of ink. The edge of the open lower end of the cartridge, sac, or bladder container 24, whichever is employed, is positioned sealingly against an annular shoulder 26, which shoulder is located just above an internally threaded portion 28 adjacent the lower end of the barrel 22. A hollow, tubular insert 30 having an externally threaded upper portion, engages the internally threaded portion 28 of the barrel when the insert 30 is threaded into position therein, as indicated in FIGURE 1. The hollow insert 30 is cylindrically shaped and has, for example, three connecting ducts or apertures 34 through the otherwise closed upper end 35 thereof, which communicate with the lower end of the ink container 24 such that ink can flow from the container to the internal chamber 36 of the insert 30. The chamber 36 houses a compression spring 38 and an annular thrust member 40 at the lower end thereof. The thrust member 40 is formed on the lower end thereof with a plurality of small radial grooves 41 extending between with the central passage 39 and the outer edge thereof to enable ink to flow therethrough to ducts or channels in the pen stylus, as hereinafter described.

The lower open end of the insert 30 has an internally threaded portion 42, which engages an externally threaded portion 44 at the upper end of a tubular housing 46. The housing 46 is shaped and constructed to contain an elongated, generally cylindrical stylus member 48. The housing 46 contains a cylindrical guide sleeve 50 at the upper end thereof, and at the lower end has a reduced diameter neck portion 52, which by abutment with the tapered lower end thereof permits limited, guided, axial sliding movement therein of the stylus member 48. The housing 46 above the neck portion 52 is formed with a uniform inside diameter, which is slightly greater than the outside diameter of the body of the stylus member 48 contained therein, thereby providing an annular clearance space therebetween, as shown at 49. The stylus member 48 is urged toward a normally extended position, as shown in FIGURE 1, by the compressive force of spring 38 acting through the thrust member 40 against the top end of the stylus member 48. The stylus member 48 is held within the housing 46, as before mentioned, by the reduced diameter neck portion 52 thereof, which permits only a limited length of the smaller lower nib portion of the stylus member 48 to extend outwardly therethrough.

The body or barrel of the fountain pen 20 may have a number of equivalent, alternative forms. For example, the lower portion of the hollow body or barrel 22 may have an inwardly projecting annular flange or an apertured diaphragm attached or integrally molded therein, so as to serve the same function as the apertured upper end closure 35 of the hollow insert 30. Such flange or diaphragm (not shown) would then provide means for engagement of the upper end of spring 38, and the central open space through the annular flange or the apertures of the diaphragm would comprise connecting passage means for supplying ink from container 24 to chamber 36. When the body 22 is provided with a flange or apertured diaphragms, as before mentioned, the insert 30 can then have an open upper end and also, if desired, be made integral with the tubular housing 46.

The before mentioned cylindrical guide sleeve 50 is preferably fabricated from a pliable plastic material, such as Teflon, to serve as a longitudinal bearing member within which the stylus member 48 is axially slidably supported.

FIGURE 2 shows the stylus member 48 telescopically retracted into the lower neck portion 52 and housing 46 resulting from the application of sufficient downward force through the barrel 22, while the lower end of the nib portion of the stylus member 48 is in contact with a writing surface to cause the stylus member to compress the spring 38. The stylus member 48 has elongated, longitudinal duct means which may comprise channels, ducts or grooves, which are generally provided on diametrically opposite sides of the stylus member, as shown at 56 and 58, respectively. In the version of the pen apparatus, shown in FIGURE 1, the nibs 54 are normally supplied with ink by the three closely spaced together parallel grooves 56 formed along the entire length of one side of the stylus body and which communicate at their upper ends with the chamber 36 of insert 30, and at the lower ends thereof near the lower end of the stylus member converge to a single groove which, as best shown in FIGURE 3, enters the slot or space between the nibs 54. The groove 58 similarly enters the slot or space between the nibs 54 at its lower end, but terminates at its upper end slightly below the top end of the stylus body, as shown at 59.

It can be seen from FIGURE 1 that normal writing pressure on the nibs 54 would displace the thrust member 40 only slightly to permit limited flow of ink into the upper ends of the stylus grooves 56 and thence to the nibs 54. In practice, the sealing or flow restricting effect of the thrust member 40 against the top end of the stylus member 48 is relatively negligible or considerably limited by reason of the radial grooves 41 in the lower surface of the thrust member 40, and the thrust member 40 is provided primarily for the purpose of transfer of force from the spring 38 to the top end of the stylus member. However, such normal writing pressure will not move the stylus member 48 upwardly in the housing relative to the guide sleeve 50 sufficiently to bring the top end 59 of the diametrically opposite longitudinal groove 58 above the top end of guide sleeve 50 and into communication with the chamber 36 of insert 30, as illustrated in FIGURE 2.

A setscrew 60 is provided in a threaded hold extending radially through the wall of an intermediate portion 45 of the tubular member 46 and is adjustably positioned therein such that the tip of the setscrew slidably engages the longitudinal groove 58, as shown in FIGURES 1 and 4. The tip of the setscrew 60, while it does not extend into the groove 58 sufficiently to impede the flow of ink down the groove 58, it serves as a key or guide means permitting longitudinal sliding movement, but preventing rotational movement of the stylus member 48 relative to the housing 46. When the stylus member 48 is retracted, as shown in FIGURE 2, the top end 59 of groove 58 is raised above the top of guide sleeve 50, thereby bringing the groove 58 into communication with the chamber 36, whereby ink can flow down both the opposite longitudinal grooves 56 and 58 to provide a greater supply of ink to the lower end of the neck portion 52 of the housing 46, which then constitutes the principal writing instrumentality. The lower end opening of neck portion 52 of the housing 46 is formed such that its end surface lies in a plane, which intersects at an angle with the longitudinal axis thereof. This results in an elliptically shaped writing end surface for the neck portion 52 of the housing 46.

When the body 22 of the pen 20 is pressed downward sufficiently to force the stylus member 48 to retract into the housing 46 to the condition indicated in FIGURE 2, a certain amount of air is normally trapped within the clearance space 49 between the stylus body 48 and the housing 46. In order to provide an outlet for such trapped air, one or more vent slots or apertures, such as shown at 64*a* and 64*b*, are provided in the side of the tubular housing 46 adjacent the grooves 56, as shown in FIGURE 5. The trapped air is thus permitted to escape to the atmosphere so that a continuously even flow

of ink may be obtained at the lower end of the neck portion of the tubular housing **46** to produce complete and unbroken markings free from irregularities or spottiness.

The stylus member **48** including its lower ribbed portion **54**, as employed in the assembly of FIGURES 1 and 3, is shown in perspective view in FIGURE 6. The pair of nibs **54** are tapered in form and rounded at their lower ends, as illustrated in FIGURES 1, 3, and 6, such that when the ends of the nibs **54** of the stylus member **48** are placed in contact with a writing surface and the pen, as viewed in FIGURE 1, is moved perpendicularly to the plane of the paper of the drawing, a relatively thin line is made. However, when the pen is moved in a direction perpendicular to the plane of the paper of the drawing, as viewed in FIGURE 3, a line which is more than twice as wide as before is made.

When the pen is pressed down upon a writing surface with sufficient force to retract the stylus member **48** to the position shown in FIGURE 2, a solid elliptical spot, having the same size and shape as that of the lower end of the neck portion **52**, is made. If the pen is then moved in a horizontal direction in the plane of the paper of the drawing, as viewed in FIGURE 2, while maintaining the end of neck portion **52** in contact with the writing surface, a line which has the width of the minor axis of the ellipse is made. However, if the pen is moved in a direction perpendicular to the plane of the paper of the drawing, as viewed in FIGURE 2, a line having a width equal to the major diameter of the ellipse is then made on the writing surface. Thus, at least five different widths or shaped markings can be made with the pen by appropriate positioning and manipulation of the pen relative to the writing surface.

FIGURES 8, 9, and 10 show a stylus **66** suitable for use in the pen structure of FIGURES 1 and 2, but having a slightly different form than that of stylus member **48**. In this latter form of the stylus **66**, the body portion thereof is of substantially the same size and form as that of FIGURES 1 to 7 inclusive, but the lower end portion thereof is formed with a pair of nibs **68** which, instead of being tapered and terminating in rounded lower ends, as shown at **54** in FIGURE 1, are substantially untapered at the lowermost end portion thereof and terminate in sloping, flat end surfaces, as shown at **70** in FIGURE 8. With this latter form of stylus, as shown in FIGURES 8, 9, and 10, a very thin line is made by positioning the relatively sharp edge or tip of the stylus nibs **68** in contact with the writing surface and moving the pen in a direction perpendicular to the plane of the paper of the drawing, as viewed in FIGURE 8. A thicker line, however, is made while maintaining the latter position of the tips of the nibs on the writing surface, when the pen is moved in a horizontal direction in the plane of the paper of the drawing, as viewed in FIGURE 8. If the pen is then tilted so that the sloping face **70** is brought in flush contact with the surface on which it is used, two additionally different widths of lines can be made by moving the pen in the before mentioned respective different directions at right angles to each other. When the stylus member **66** is pushed into telescopically retracted position within the tubular housing member **46** sufficient to bring the lower end of the neck portion **52** of the housing **46** into contact with the writing surface in the manner hereinbefore described, still wider markings or elliptical forms may be made similar to those provided, as before described, by the end of the reduced diameter neck portion **52** of the tubular member **46** of FIGURE 1.

Referring now to FIGURES 11, 12, and 13, in which a still further modification of the construction of the pen mechanism is illustrated, a pen barrel, shown generally at **20***a*, may be the same or similar in all respects to the pen barrel **20**, shown in FIGURES 1 and 2, except that its internally threaded portion for receiving the pen mechanism is located adjacent the lower end thereof, as shown at **28***a*.

Threaded into the lower end of the barrel **20***a* on the threads **28***a* is an integrally formed tubular attachment member, shown generally at **72**, and consisting respectively from the upper end to the lower end thereof of an upper hollow tubular insert portion **30***a*, an intermediate threaded portion **42***a* threaded into threads **28***a*, an intermediate collar portion **45***a* of slightly increased outside diameter relative to the inside portion **30***a* and a lower, relatively short tubular nipple portion **73** of a reduced outside diameter relative to both the collar portion **45***a* and the insert portion **30***a*. The attachment member **72** is preferably made of a plastic material, such as Teflon. the insert portion **30***a* is provided with internal threads **74** at the upper end thereof, into which is threaded a disk shaped closure member **76** having one or more apertures extending therethrough, as shown at **78**. The apertures **78** provide communication between the lower end of the barrel **20***a* or the ink container **24***a* therein and the internal chamber **36***a* formed within the bore of the insert portion **30***a*. The chamber **36***a* houses a helical compression spring **38***a* and a generally annular thrust member **40***a* at the lower end thereof. The thrust member **40***a* is shaped to receive the lower end of the spring **38***a* and is provided with a central passage **39***a* to enable ink to flow therethrough from the chamber **36***a* to the top of the pen stylus and thence through ducts in the pen stylus, as hereinafter more fully described.

Making a detachable light press fit onto the nipple portion **73** is a tubular housing **46***a* similar in shape to the lower portion of the tubular housing **46**, shown in FIGURES 1 and 2. The housing **46***a* is shaped and constructed to enclose an elongated cylindrical stylus assembly **80**, the upper end of which stylus assembly makes a longitudinally slidable fit within the bore of the collar portion **45***a* and nipple portion **73**. The lower end of the housing **46***a* is formed with a reduced diameter neck portion **52***a*, similar to that shown at **52** in FIGURES 1 and 2, which serves to limit the guided axial sliding movement therein of the stylus assembly **80**. The housing **46***a* above the neck portion **52***a* is formed with a uniform inside diameter, which is slightly greater than the overall outside diameter of the stylus assembly **80** contained therein, thereby providing an annular clearance space therebetween, as shown at **49***a*. The housing **46***a* is provided with one or more vent slots or apertures, such as shown at **64***c*, to permit air entrapped in the clearance space **49***a* to escape, as hereinbefore mentioned in connection with the vent slots **64***a* and **64***b* of FIGURES 1 and 2.

The stylus assembly **80** is urged toward a normally downwardly extended position, as shown in FIGURE 11, by the compressive force of spring **38***a* acting through the thrust member **40***a* against the top end of the stylus assembly **80**. The stylus assembly **80** is held within the tubular attachment member **72** and within the housing **46***a* against the force of the spring **38***a* by engagement adjacent its lower end with the reduced diameter neck portion **52***a*, as hereinbefore mentioned, which limits the length of outward projection therefrom of the lower nib portion **84**.

FIGURES 12 and 13 illustrate the form of stylus assembly **80** employed in the pen mechanism of FIGURE 11. Such stylus assembly **80** comprises a central, generally cylindrical metal body **82**, having at its lower end a tapered bifurcated portion forming a pair of nibs **86** and **88**. While the nibs **86** and **88** are shown with rounded ends, similar to those shown in FIGURES 1, 2, 3, 6, and 7, they may also be formed substantially untapered and with sloping flat end surfaces of the kind illustrated in FIGURES 8, 9, and 10.

Tightly press fitted onto the body **82** of the stylus is a tubular covering sleeve **90**. The covering sleeve **90** is of such length and so positioned that it extends from a short distance above the upper end of the stylus body **82**

to a point adjacent the roots of the nibs 86 and 88 and adjacent the upper limit of the bifurcating slot 92 therebetween. A shallow rimmed recess 94 is thereby formed on the top end of the stylus body 82.

The otherwise cylindrical exterior surface of the tubular covering sleeve 90 is formed on one side with a flat surface 99 which extends longitudinally throughout its length. In the assembly of the instrumentality, as shown in FIGURE 11, the flat surface 94 of the covering sleeve 90 is slidably engaged by the inner tip of a setscrew 60*a* threaded through the collar portion 45*a* of the tubular attachment member 72. The stylus member 80 is thus restrained from rotational movement, but is permitted longitudinal movement relative to the attachment member 72 and housing 46*a*, as hereinbefore mentioned.

The exterior of the stylus body 82 is formed with a pair of diametrically opposite shallow grooves 96 and 98, which being tightly covered by the sleeve 90 form ducts, which extend longitudinally from the upper end thereof into confluence with the upper ends of the bifurcating slot 92 between the nibs 86 and 88. The upper ends of the ducts thus formed by grooves 96 and 98 are in communication with the chamber 36*a* by way of the before mentioned recess 94 and central passage 39*a* in the thrust member 40*a*. The chamber 36*a* is, in turn, in communication, by way of apertures 78 in the closure member 76, with the interior of the tubular body or barrel 20*a* of the pen, in which the ink supply is normally contained. The lower ends of the ducts formed by grooves 96 and 98 merge with or enter the upper end of the slot 92 separating the stylus nibs 86 and 88, as best shown in FIGURE 13.

FIGURES 14 and 15 illustrate further slight modifications of the form of stylus assembly shown at 80 in FIGURES 12 and 13, and which may be employed in the pen mechanism of FIGURE 11. The form of stylus assembly shown at 80*a* in FIGURE 14 comprises a central, generally cylindrical metal body 82*a* of size and shape similar to that shown at 82 in FIGURES 11 and 13. The stylus body 82*a* and the other stylus bodies hereinbefore mentioned are preferably made of stainless steel. The exterior of the stylus body 82*a* is formed with a pair of diametrically opposite, longitudinally extending flat surfaces 96*a* and 98*a*. Tightly press fitted onto the stylus body 82*a* is a tubular covering sleeve 90*a* which may be made of either metal, such as brass, or of a plastic material, such as Delrin, Teflon, or the like. A pair of ducts are thereby formed in the clearance spaces formed between the covering sleeve 90*a* and the flats 96*a* and 98*a*, which extend longitudinally from the upper ends of the stylus assembly into confluence with the upper ends of the bifurcating slot 92 between the nibs 86 and 88.

The otherwise cylindrical exterior surface of the tubular covering sleeve 90*a* is formed on one side with a flat surface 99*a* which extends longitudinally throughout its length. In the assembly of the instrumentality in the manner shown in FIGURE 11, the flat surface 99*a* of the covering sleeve 90*a* is slidably engaged by the inner tip of the set screw 60 threaded through the collar portion 45*a* of the tubular attachment member 72. The stylus assembly is thus restrained from rotational movement, but is permitted longitudinal movement relative to the attachment member 72 and housing 46*a*, as hereinbefore described in connection with the stylus assembly shown in FIGURES 11 and 12.

FIGURE 15 shows a cross section similar to that shown in FIGURE 14 of another modified form of the stylus assembly. In the form of stylus assembly shown at 80*b* in FIGURE 15, the stylus body 82*b* is formed with a pair of diametrically opposite, approximately semi-cylindrical grooves 96*b* and 98*b*, which are tightly covered by a covering sleeve 90*b* to form longitudinal ducts, which extend longitudinally from the upper end into confluence with the upper ends of the bifurcating slots between the nibs. Tightly contained within the grooves 96*b* and 98*b* are small diameter plastic tubes 136 and 138, preferably composed of Teflon. These tubes 136 and 138 extend throughout the length of the grooves 96*b* and 98*b* from the upper shallow recess in the upper end of the stylus assembly down into communication with the upper ends of the before mentioned bifurcating slots between the nibs. The plastic tubes 136 and 138 have the advantage of improving the flow of writing fluid from the chamber 36*a* through the stylus assembly to the writing nibs free from the tendency to clog or resist flow, as has sometime been the experience for other kinds of materials employed.

The operation and manipulation of the pen apparatus of FIGURES 11, 12, 13 and including the apparatus modifications hereinbefore described in connection with FIGURES 14 and 15, is similar to that of the hereinbefore described FIGURES 1 to 10 inclusive.

Referring next to FIGURES 17 to 21, inclusive, in which still another modification of the construction of the pen mechanism is illustrated, a hollow, tubular body or pen barrel is shown generally at 20*b* which is similar to the pen barrel 20*a* shown in FIGURE 11, and is provided at its lower end with an internally threaded portion 28*b* for receiving a pen mechanism assembly, shown generally at 150, extending from the lower end thereof.

Threaded into the internally threaded portion 28*b* in the lower end of the barrel 20*b*, is a relatively elongated, downwardly tapered, tubular attachment member 152, having an internal bore extending therethrough from the upper threaded end to the lower threaded end thereof, such bore having an upper cylindrical bore portion 154 of uniform inside diameter, an intermediate, downwardly converging, frusto-conical bore portion 156, and a lower cylindrical bore portion 158 of uniform inside diameter but of reduced inside diameter relative to the upper bore portion 154. The lower end of the lower bore portion 158 of the tubular attachment member 152 is provided with internal threads as shown at 160, which threadedly receive a downwardly tapered, tubular, lower end housing 162. The tapered lower end of the lower end housing 162 is formed with a reduced diametered end neck portion 164, similar in effect to the reduced diameter neck portion 52 and 52*a* shown in FIGURES 1 and 11, respectively, said neck portion terminating in a lower end opening 165.

Enclosed coaxially within the tapered tubular attachment member 152 and extending downwardly through the lower end housing 162, is an elongated stylus assembly, shown generally at 166. The stylus assembly 166 includes an elongated, generally cylindrical shaped stylus body 167, the upper end of which makes a longitudinally slidable fit within a bore 168 of an insert body shown generally at 170. The insert body 170 is formed with an upper hollow cylindrical connector nipple portion 172 and a lower frusto-conical plug portion 174, the latter of which, in the assembly of the apparatus, normally makes a fluid-tight fit within the before mentioned frusto-conical intermediate bore portion 156 of the tubular attachment member 152, thereby dividing the upper internal bore portion 158 of the attachment member 152 from the lower internal bore portion 158 thereof. The lower portion of the stylus body 167 is axially slidably guided in a tubular bushing 176 press fitted into a bore 178 extending axially into the upper portion of the lower end housing 162. The lower extremity of the stylus member 167, which is formed at its lower end with a tapered, bifurcated nib portion 179, extends axially slidably through a reduced inside diametered passage 180 extending from the lower end of bushing 176 down through the neck portion 164 and out therefrom through the lower end opening 165. The lower end housing 162, above the passage 180 is formed with a uniform inside diametered portion 182 of slightly greater inside diameter than either the passage 180 or the inside diameter of the bore 178 through the bushing 176, thereby providing a lower, an-

nular chamber therebetween, as shown at **184**. The lower end housing **162** is provided with one or more laterally extending vent slots or apertures, such as shown at **186** to permit air entrapped in chamber **184** to escape, as hereinbefore mentioned in connection with the vent slots **64***a*, **64***b*, and **64***c* of FIGURES 1, 2, and 11.

Press fitted onto, and thereby fixed at an intermediate portion of the stylus body **167**, is an annular stop collar **188**. The stylus body **167** is urged slidably toward its lowermost position, with the nib portion **179** extending from the lower end opening **165** of the neck portion **164** of the lower end housing **162** as shown in FIGURES 17 and 18 by a coil spring **190**, acting under compression between the upper side of the annular stop collar **188** and an annular shoulder **192**, formed in a counterbored recess **194** in the lower end of the tapered plug portion **174** of the insert body **170**. The annular stop collar **188** thus serves to limit the maximum extension of the nib portion **179** of the stylus body **167** from the lower end opening **165** of the neck portion **164** of the lower end housing **162**.

Making a light axial frictional fit on an intermediate portion of the stylus assembly **166**, immediately above and normally resting on the upper side of the annular stop collar **188**, is a thin walled covering sleeve **196**.

The exterior of the stylus body **167** is formed with a pair of diametrically opposite, longitudinally extending, shallow grooves **198** and **200**, a portion of the length of which immediately above the stop collar **188** is covered by the covering sleeve **196**, and which extend longitudinally from the upper end of the stylus body **167** into confluence with the upper end of a bifurcating slot **202** formed in the nib portion **179** at the lower end thereof. The upper ends of the grooves **198** and **200** are thus maintained in communication with the chamber **36***b* formed in the bore **168** of the connector nipple, portion **172** of the insert body **170**, and the lower ends of the grooves **198** and **200** are, as heretofore mentioned, in communication and merge with the upper end of the bifurcating slot **202** of the nib portion **179**, as best shown in FIGURE 17.

The upper end of the cylindrical chamber **36***b* is formed of an upper end closure **204** which is provided with a plurality of radially extending, relatively narrow entrance slots **206**, as best shown in FIGURE 4 for providing controlled communication and flow of ink between the upper ink supply reservoir portion of the pen and the interior of the before mentioned chamber **36***b* and thence to the upper ends of the grooves **198** and **200** in the stylus body **167**.

The pen barrel shown generally at **20***b*, as herebefore mentioned, has a hollow tubular body comparable to that of a conventional fountain pen, for containing a suitable ink supply. For convenience of illustration, in the version of the apparatus illustrated in FIGURE 17, an open bottomed cartridge type of ink container **208** is illustrated which may include a more or less conventional flexible or relatively rigid tubular sack or bladder **210** formed with a lower end attachment means **212** having an opening **214** therein adapted to make a liquid tight coupling upon the connector nipple portion **172** of the insert body **170**. The lower end of the lower end attachment connector **212** is formed with the generally annular, downwardly converging, frusto-conical terminal portion **216** which makes a substantially fluid tight fit into a correspondingly shaped generally annular socket **218** formed in the upper annular edge of the insert body **170**. The operation and manipulation of the pen apparatus of FIGURES 17 to 18, inclusive, is similar to that of the herein before described apparatus of FIGURES 1 to 16, inclusive.

The pair of tines of the nib portion **179** as shown in FIGURES 17 and 18 are tapered in form and flattened diametrally such that when the end of the nib portion **179** of the stylus body **167** is placed in contact with a writing surface and the pen, as viewed in FIGURE 18, is moved perpendicularly to the plane of the paper of the drawing, a relatively thin line is made. However, when the pen is moved in a direction perpendicular to the plane of the drawing as viewed in FIGURE 17, a much wider line is made.

Similarly, when the pen is pressed down on a writing surface with sufficient force to retract the nib portion **179** entirely within the lower end opening of the lower end housing **162**, as shown in broken lines at **179** in FIGURE 18, the lower end opening **165** of the neck portion **164** is brought into contact with the writing surface and a solid elliptical or circular spot is thereby made having the same size and shape as that of the lower end opening **165**. If the pen is then moved in a horizontal direction while maintaining the lower end of the neck portion **164** in contact with the writing surface, a line which has the width of the diameter of such lower end opening **165** is made.

When the nib portion **179** is placed into light contact with the writing surface and with insufficient downward pressure thereon causing retracting movement of the stylus body **167** upwardly relative to the pen mechanism assembly **150**, ink from the ink container **208** flows in relatively limited quantity therefrom through the entrance slots **206**, into the chamber **36***b* and thence down through the grooves **198** and **200**, through the covering sleeve **196** on the stop collar **188** to the upper end of the bifurcating slot **202**, and thence to the lower end of the nib portion **179**. Such supply of ink is sufficient for the fine line operation of the pen under such conditions. However, when greater axial pressure is applied through the pen, sufficient to retract the stylus body **167** against the force of spring **190** such that the nib portion is fully retracted within the lower end housing **162** as indicated in broken lines at **179** in FIGURE 18, then the resultant upward movement of the upper end of the stylus body **167** within the chamber **36***b* results in slightly increased pressure in the ink contained therein. Such increased pressure in the ink contained in the chamber **36***b* results in an increased flow of ink downwardly along the grooves **198** and **200**, through the covering sleeve **196**, stop collar **188** and bushing **176** to the bifurcation slot **202** in nib portion **179** and also to the lower portion of the lower chamber **184** and into the passage **180**. An increased supply of ink is thus furnished to the lower end opening **165** of the neck portion **164** for forming the before mentioned solid elliptical or circular spot on the writing surface or for forming a line having a width equal to the diameter of such elliptical or circular spot.

When the stylus body **167** moves upwardly from a fully extended position as shown in FIGURE 17 to some retracted position such as that shown in broken lines **179'** in FIGURES 17 and 18, the stop collar **188** is moved out of contact with the upper end of the bushing **176**, thereby increasing access of ink which accumulates in the bottom end of the upper cylindrical chamber **159** formed in the lower cylindrical bore portion **158** to flow into the grooves **190** and **200** and thus additionally serves to increase the required supply of ink to the lower end of the pen.

It is to be noted that the modified version of the apparatus illustrated in FIGURES 17 to 21 differs, in part, from that of the apparatus illustrated in connection with FIGURES 1 to 16 in that there are two air escape and ink supply regulatory chambers, namely that shown at **159** within the lower cylindrical bore portion **158** and that shown at **184** in the lower end housing **162**. An improved regulation of the demanded ink supply is thus attained. Improved rigidity of the guidance and reduced friction of movement of the stylus assembly **166** is also obtained in this modified version of the apparatus.

Various materials may be used for an apparatus described in connection with FIGURES 17 to 21 inclusive. For example, the stylus body and the stop collar **188** may

be made of stainless steel or the like non-corrosive metal. The insert body 170 including the upper cylindrical portion and the tapered plug portion 174, the bushing 176 and the covering sleeve 196 are preferably made of polytetrafluorethylene which is sold under the tradename "Teflon". It has been discovered that the use of Teflon for these parts greatly improves the action of the pen and reduces its tendency to become clogged or plugged with dried or thickened ink. The lower end housing 162 may also be made of stainless steel and the other parts of the pen mechanism, such as the attachment member 152, may be made of a suitable plastic such as, for example, that sold under the tradename of "Delrin".

Pens using the hereinbefore described stylus assembly constructions, such as shown at 48, 66, 80, 80*a*, 80*b* and 166 in FIGURES 1, 9, 11, 14, 15, and 17 are, of course, also useful in lettering and in writing ordinary words and expressions, as well as music symbols. The stylus 66 is particularly suited for writing lyrics, including titles and other expressions. The tubular housing members 46 and 46*a*, when the stylus members are depressed or retracted into them, as illustrated in FIGURE 2, are especially useful for making bold and large letters or numbers for titles and the like. Thus, the pen of this invention is universally useful for writing all of the necessary expressions, lyrics, and symbols in a musical manuscript.

FIGURE 16 shows the various musical symbols and notations actually made by the pen. The staff 100 is normally printed on a musical manuscript. However, the G clef character 102, words 104, and the remaining symbols and notations are readily made with a pen constructed according to this invention. The numerals 106, which indicate the time for the music, were written, for example, by holding the pen 20, 20*a* or 20*b* in the position generally shown as indicated in FIGURES 1, 11 and 18, whereby thin vertical lines of each numeral 106 were made by moving the pen 20, 20*a* or 20*b* in a direction corresponding to movement perpendicular to the plane of the paper of the drawing, as viewed in FIGURE 1. At the end of each such vertical stroke, the pen 20 is then depressed to form the oval spot by means of the lower end of the neck portion 52, 52*a*, or 146 of the tubular member 46, 46*a* or the lower end housing 162 shown in FIGURES 1, 11 and 17, respectively. The other broader lines of each numeral 106 are formed by simply moving the pen in the direction following those lines.

In like manner, the vertical lines 108 of each note are similarly made by moving the pen 20 in the correct direction. The solid elliptically shaped spots 110 are, of course, formed by simply depressing the pen 20 as aforesaid at the end of each vertical stroke. The dot 112 is made by a slight horizantal movement of the pen 20. Extended horizontal movement of the pen produces the heavier lines such as 114, 116, and 118. The top line 120 of the one-eighth note is directly formed by moving the pen in the indicated curving direction. The pen, of course, makes a varying width line when moved at varying angular directions, which are intermediate to the strictly vertical and horizontal directions. Thus, the half note and whole note ellipses 122 and 124 are formed with lines of intermediate thickness by drawing the ellipses having an inclined major axis to the horizontal. The measure bar 126 is made by rotating the pen 20, 20*a* or 20*b* ninety degrees to that shown in FIGURES 1, 11 and 18 and then drawing a vertical line which would correspond to movement of the pen in a direction perpendicular to the plane of the paper of the drawing.

The following dimensions for various parts of the pen apparatus, which have been found suitable for use as hereinbefore described, are as follows. The cylindrical portion of the stylus body, shown at 48 in FIGURES 1 and 2, may have an outside diameter of approximately 0.085", and that at 82 in FIGURE 13, and 167 in FIGURE 17, may have an outside diameter of approximately 0.064" and an overall length of from approximately 1 to 1¼" for the version shown in FIGURES 1 and 11 and approximately 1½" for that shown in FIGURE 17. The covering sleeves 90, 90*a*, 90*b* and 196 for the construction of the stylus bodies 82, 82*a*, 82*b*, and 167 as shown in FIGURES 13, 14, 15, and 17 may have an inside diameter of approximately 0.085" or 0.064" or that which will make a snug press fit on the corresponding stylus body. The nibs on the bottom end of the stylus body may have several forms, as hereinbefore described. In general, the slot or gap separating the nibs may have a width of approximately 0.002". The dimensions of the lower ends of the pen nibs 54 crosswise of the slot, as viewed in FIGURE 3, for example, may be approximately 0.050" and the diameter of curvature of the lower end thereof, as viewed in FIGURE 1, may be approximately from 0.030" to 0.050".

The opening in the bottom end of the neck portions 52, 52*a* and 165 of the stylus housings 46 and 46*a* and 162 may have an inside diameter of approximately 0.065", and the outside diameter at the same portion of the neck may be approximately 0.085". The longitudinal grooves in the sides of the stylus body may be semicylindrical in form as shown in FIGURES 4, 12 and 15 or rectangular sectioned as shown in FIGURES 19 and 20 and approximately 0.015" across for a pen used primarily for writing music on a manuscript and approximately 0.020" for small lettering and approximately 0.025" for large lettering.

From the foregoing description, it is apparent that a highly versatile and useful pen for use on musical manuscripts is thus provided. While preferred embodiments of this invention have been described, it is to be understood that the particular embodiments of this invention herein described and shown in the attached drawings are merely illustrative and not restrictive of the broad invention, and that various changes in design, structure, and arrangement may be made by those skilled in the art without departing from the spirit and scope of the appended claims.

What is claimed is:

1. In a fountain pen, a pen structure comprising:
a tubular body having an upper portion for supply of ink thereto and a lower end opening of reduced diameter;
an upper guide bore of reduced inside diameter in said body adjacent said upper portion;
a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;
said bores and said lower end opening being axially spaced-apart and thereby forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores, and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said bores and said opening;
a stylus member in said body extending between and axially slidable in said bores between an extended position in which a lower end portion of said stylus member protrudes axially exteriorly of said lower end opening of said body;
and a retracted position in which said lower end portion of said stylus member is retracted within said lower end opening of said body;
resilient bias means constantly urging said stylus member toward said extended position;
said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position.

2. In a fountain pen, a pen structure comprising:
a tubular body having an upper body portion for sup-

ply of ink thereto and a lower end opening of reduced diameter;

an upper guide bore of reduced inside diameter in said body adjacently below said upper body portion, said upper guide bore being closed adjacent its upper end portion except for a passage of restricted size relative to said upper guide bore, interconnecting said upper guide bore and said upper body portion for restricted flow therebetween;

a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;

said bores and said lower end opening being axially spaced-apart and forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores;

and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said bores and said lower end opening;

a stylus member in said body extending between and axially slidable in said bores between an extended position in which a lower end portion of said stylus member protrudes axially exteriorly of said lower end opening of said body and the upper end of said stylus member is located in a lower position in said upper guide bore, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end opening of said body and the upper end of said stylus member is located in an upper portion in said upper guide bore;

resilient bias means constantly urging said stylus member toward said extended position;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, the lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position, and the movement of said upper end portion of said stylus member from said lower position to said upper position thereof in said upper guide bore resulting in increased supply of ink from the upper end of said upper guide bore to the portion of the stylus member extending through said first chamber.

3. In a fountain pen, a pen structure comprising:

a tubular body having an upper portion for supply of ink thereto and a lower end having therein an opening of reduced diameter;

an upper guide bore of reduced inside diameter in said body adjacently below said upper portion;

a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;

said bores and said lower end opening being axially spaced-apart and forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores, and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said lower end opening;

a stylus member in said body extending between and axially slidable in said bores between an extended position in which a lower end portion of said stylus member protrudes axially exteriorly of said lower end opening of said body, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end opening of said body;

valve means including duct means carried by said stylus member in said first chamber intermediate said upper guide bore and said lower guide bore to increase the passage of ink contained in the lower end of said first chamber through said duct means to the upper end of said second chamber when said stylus member is in said retracted position, and to decrease such passage of ink when said stylus is in said extended position;

resilient bias means constantly urging said stylus member toward said extended position;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position.

4. Fountain pen apparatus in accordance with claim 3 in which said valve means includes an annular stop collar fixed on an intermediate section of said stylus member and seating on the top end of said lower guide bore when said stylus member is in said extended position, and unseated from said top end of said lower guide bore when said stylus member is in said retracted position.

5. In a fountain pen, a pen structure comprising:

a tubular body having an upper portion for supply of ink thereto and a lower end having therein a coaxial opening of reduced diameter;

an upper guide bore of reduced inside diameter in said body adjacent said upper portion;

a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;

said bores and said lower end opening being axially spaced-apart and thereby forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores, and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said bores and said opening;

a stylus member in said body extending between and axially slidable in said bores between an extended position in which a lower end portion of said stylus member protrudes axially exteriorly of said lower end opening of said body, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end opening of said body;

duct means extending longitudinally along said stylus member and communicating at the upper end thereof with the upper end portion of said upper guide bore, and communicating at the lower end thereof with said lower end portion of said stylus member below the lower end portion of said lower guide bore;

resilient bias means constantly urging said stylus member toward said extended position;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position.

6. In a fountain pen, a pen structure comprising:

a tubular body having an upper portion for supply of ink thereto and a lower end opening of reduced diameter;

an upper guide bore of reduced inside diameter in said body adjacently below said upper portion;

a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;

said bores and said lower end opening being axially spaced-apart and forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores, and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said lower end opening;

a stylus member in said body extending between and axially slidable in said bores between an extended position in which a lower end portion of said stylus member protrudes axially exteriorly of said lower end opening of said body, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end opening of said body;

duct means included with said stylus member and extending from communication with the upper end portion of said upper guide bore through said lower guide bore to communication with the lower end portion of said stylus member;

valve means carried by said stylus member and operative in conjunction with the upper end of said lower guide bore to vary the quantity of ink flow down said duct means when said stylus member is moved between said extended position and said retracted position;

resilient bias means constantly urging said stylus member toward said extended position;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position.

7. In a fountain pen, a pen structure comprising:

a tubular body having an upper portion for supply of ink thereto and a lower end including a lower end opening of reduced diameter;

an upper guide bore of reduced inside diameter in said body adjacent said upper portion;

a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;

said bores and said lower end opening being axially spaced-apart and thereby forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores, and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said bores and said opening;

a stylus member in said body having a bifurcated nib portion on the lower end thereof and duct means interconnecting the upper end portion of said stylus member and said nib portion, said stylus member extending between and axially slidable in said bores between an extended position in which a lower end portion of said nib portion protrudes axially exteriorly of said lower end opening of said body and the upper end of said stylus member is located in a lower portion of said upper guide bore, and a retracted position in which said lower end portion of said nib portion is retracted within said lower end opening of said body and the upper end of said stylus member is located in an upper portion of said upper guide bore;

valve means carried by said stylus member in said first chamber and operative by axial movement of said stylus member from said extended position to said retracted position to reduce the restriction to flow down said duct means from said upper guide bore through said lower guide bore to said nib portion;

resilient bias means constantly urging said stylus member toward said extended position;

said lower end portion of said nib portion constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position, and the movement of said upper end of said stylus member from said lower position to said upper position in said upper guide bore resulting from movement of said stylus member from said extended position to said retracted position, resulting in forcing flow from the upper end of said upper guide bore down through said duct means toward said nib portion.

8. In a fountain pen, a pen structure comprising:

a tubular body having an upper portion for supply of ink thereto and a lower end including a lower end opening of reduced diameter;

an upper guide bore of reduced inside diameter in said body adjacently below said upper portion, there being a restricted passage interconnecting the upper end of said upper guide bore and said upper portion of said body;

a lower guide bore of reduced inside diameter in said body adjacent said lower end opening;

said bores and said lower end opening being axially spaced-apart and thereby forming, between said upper guide bore and said lower guide bore, a first chamber of increased inside diameter relative to said bores, and between said lower guide bore and said lower end opening, a second chamber of increased inside diameter relative to said bores and said opening;

a stylus member in said body having a bifurcated nib portion on the lower end thereof and duct means interconnecting the upper end portion of said stylus member and said nib portion, said stylus member extending between and being axially slidable in said bores between an extended position in which a lower end portion of said nib portion protrudes axially exteriorly of said lower end opening of said body and the upper end of said stylus member is located in a lower portion of said upper guide bore, and a retracted position in which said lower end portion of said nib portion is retracted within said lower end opening of said body and the upper end of said stylus member is located in an upper portion of said upper guide bore;

valve means carried by said stylus member in said first chamber and operative by axial movement of said stylus member from said extended position to said retracted position to reduce the restriction to flow down said duct means from said upper guide bore through said lower guide bore to said nib portion;

resilient bias means constantly urging said stylus member toward said extended position;

said lower end portion of said nib portion constituting the writing instrumentality of said fountain pin when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in said retracted position, and the movement of said upper end of said stylus member from said lower position to said upper position in said upper guide bore resulting from movement of said stylus member from said extended position to said retracted position, resulting in forcing flow from the upper end of said upper guide bore down through said duct means toward said nib portion.

9. Apparatus in accordance with claim 8 in which the surface of said upper guide bore and said lower guide bore is composed of polytetrafluorethylene.

10. In a fountain pen, a pen structure comprising:

an elongated tubular body having an upper end portion and a lower end portion;

a main bore extending axially through said body and having an axially upwardly facing shoulder section intermediate said upper end portion and said lower end portion;

a plug member sealingly seated on said shoulder section, and having a coaxial, upper guide bore therein, said upper guide bore being closed adjacent its upper end except for a passage of restricted size relative to the inside diameter of said upper guide bore, interconnecting said upper guide bore and said upper end portion;

a downwardly tapered, lower end housing coaxially connected to the lower end of said tubular body and having a coaxial lower bore therethrough communicating at its upper end with the lower end of said main bore and having a coaxial lower end opening, said lower bore being of reduced inside diameter relative to the adjacent portion of the said main

bore thereabove, thereby forming a first chamber intermediate said plug member and the upper portion of said lower end housing;

said lower bore having an intermediate section of increased inside diameter relative to the axially adjacent upper and lower portions thereof, thereby forming within said lower end housing a second chamber, and an axially adjacent lower guide bore;

an elongated, stylus member in said tubular body having a bifurcated nib portion on the lower end thereof and duct means interconnecting the upper end portion thereof and said nib portion, said stylus member extending between and being coaxially slidable in said upper guide bore and said lower guide bore, between an extended position in which a lower end portion of said nib portion extends axially outward from said lower end opening and the upper end of said stylus member is located in said upper guide bore at a lower position, and a retracted position in which said nib portion of said stylus is retracted within said lower end housing and the upper end of said stylus member is located in said upper guide bore at an upper position;

resilient means constantly biasing said stylus member toward said extended position;

said lower end of said nib portion constituting the writing instrumentality of said pen when said nib portion is in such extended position, and said lower end opening of said lower end housing comprising the writing instrumentality when said nib portion is in such retracted position.

11. In a fountain pen, a pen structure comprising:

an elongated tubular body having an upper end portion and a lower end portion;

a main bore extending axially through said body and having an axially downwardly converging, frusto-conical bore section intermediate said upper end portion and said lower end portion;

a correspondingly, frusto-conically shaped plug member sealingly seated within said frusto-conical bore section, and having a coaxial, upper guide bore therein, said upper guide bore being closed adjacent its upper end except for a passage of restricted size relative to the inside diameter of said upper guide bore, interconnecting said upper guide bore and said upper end portion;

a downwardly tapered, lowed end housing coaxially connected to the lower end of said tubular body and having a coaxial lower bore therethrough communicating at its upper end with the lower end of said main bore and having a coaxial lower end opening, said lower bore being of reduced inside diameter relative to the adjacent portion of the said main bore thereabove, thereby forming a first chamber intermediate said plug member and the upper portion of said lower end housing;

said lower bore having an intermediate section of increased inside diameter relative to the axially adjacent upper and lower portions thereof, thereby forming within said lower end housing a second chamber, and an axially adjacent lower guide bore;

an elongated stylus member in said tubular body having a bifurcated nib portion on the lower end thereof and duct means interconnecting the upper end portion thereof and said nib portion, said stylus member extending between and being coaxially slidable in said upper guide bore and said lower guide bore, between an extended position in which a lower end portion of said nib portion extends axially outward from said lower end opening and the upper end of said stylus member is located in said upper guide bore at a lower position, and a retracted position in which said nib portion of said stylus is retracted within said lower end housing and the upper end of said stylus member is located in said upper guide bore at an upper position;

valve means carried by said stylus member in said first chamber for increasing the flow from said stylus in said first chamber through said duct means to said second chamber when said stylus is in said retracted position and for decreasing such flow when said stylus member is in such extended position;

resilient means constantly biasing said stylus member toward said extended position;

said lower end of said nib portion constituting the writing instrumentality of said pen when said nib portion is in such extended position, and said lower end opening of said lower end housing comprising the writing instrumentality when said nib portion is in such retracted position.

12. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having upper and lower ends adapted to be secured adjacent its upper end to said end of said hollow body;

a stylus member mounted within said tubular member and telescopically slidably movable therein between an extended position in which a lower end portion of said stylus member protrudes outwardly through said lower end of said tubular member, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end of said tubular member;

resilient biasing means for constantly urging said stylus member to said extended position;

longitudinal duct means along said stylus member communicable at the upper end with said hollow body and communicating at the lower end with said lower end portion of said stylus member for providing a flow of ink therethrough from said hollow body to said lower end portion;

and means operative in conjunction with said duct means and actuatable by retraction of said stylus member for providing a normal flow of ink down said duct means from said hollow body when said stylus member is in said extended position and an increased flow of ink down said duct means from said hollow body when said fountain pen is pressed downwardly sufficiently to depress said stylus member to said retracted position against the force of said biasing means;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member constituting the principal writing instrumentality when said lower end portion of said stylus member is in said retracted position.

13. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having an upper end adapted to be secured to said end of said hollow body and having a lower end of reduced diameter relative to said upper end;

a stylus member mounted within said tubular member and telescopically slidably movable therein between an extended position in which a lower end portion of said stylus member protrudes outwardly through said lower end of said tubular member, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end of said tubular member;

resilient biasing means for constantly urging said stylus member to said extended position;

longitudinal duct means along the sides of said stylus member communicable at the upper end with said hollow body and communicating at the lower end with said lower end portion of said stylus member

for providing a flow of ink therethrough from said hollow body to said lower end portion;

and means operative in conjunction with said longitudinal duct means and actuatable by retraction of said stylus member for providing a normal flow of ink down said duct means from said hollow body when said stylus member is in said extended position and an increased flow of ink down said duct means from said hollow body when said fountain pen is pressed downwardly sufficiently to depress said stylus member to said retracted position against the force of said biasing means;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of reduced diameter of said tubular member constituting the principal writing instrumentality when said lower end portion is in said retracted position.

14. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having an upper end adapted to be secured to said end of said hollow body and having a lower end of reduced diameter relative to said upper end;

a stylus member having a lower bifurcated nib portion mounted within said tubular member and telescopically slidably movable therein between an extended position in which said nib portion protrudes outwardly through said lower end of said tubular members, and a retracted position in which said nib portion is retracted within said lower end of said tubular member;

resilient biasing means for constantly urging said stylus member to said extended position;

longitudinal duct means along said stylus member communicable at the upper end with said hollow body and communicating at the lower end with said nib portion for providing a flow of ink from said hollow body to said nib portion;

and means operative in conjunction with said duct means and actuatable by retraction of said stylus member for providing a normal flow of ink down said duct means from said hollow body when said stylus member is in said extended position and an increased flow of ink down said duct means from said hollow body when said pen is pressed downwardly sufficiently to depress said stylus member to said retracted position against the force of said biasing means;

the lower end of said nib portion of said stylus member constituting the writing instrumentality of said pen when in said extended position, and said lower end of reduced diameter of said tubular member comprising the writing instrumentality when said nib portion is in said retracted position.

15. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having upper and lower ends and adapted to be secured at its upper end to said hollow body;

guide means in said tubular member;

a stylus member longitudinally slidably supported in said guide means for coaxial telescopic movement in said tubular member between an extended position in which the lower end portion of said stylus member protrudes outwardly through said lower end of said tubular member, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end of said tubular member;

said tubular member being shaped to provide an annular clearance space of increased inside diameter within said tubular member surrounding said stylus member intermediate said guide means and said lower end thereof;

and resilient biasing means constantly urging said stylus member toward said extended position, whereby said lower end portion of said stylus member constitutes the writing instrumentality of said pen when so extended, and said lower end of said tubular member comprises the writing instrumentality of said pen when said stylus is so retracted;

such retraction being effected by depressed downwardly through said tubular member against said stylus member with sufficient force to overcome said biasing means.

16. Apparatus as defined in claim 15 and an aperture through the wall of said tubular member separate from the lower end opening thereof and interconnecting said annular clearance space with the exterior of said tubular member.

17. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having an upper end adapted to be secured to said end of said hollow body;

a tubular housing member coaxially detachably secured to the lower end portion of said tubular member, said housing member having a lower end portion of reduced internal diameter relative to its upper end;

guide means in said tubular member;

a stylus member having a lower end portion of reduced diameter, said stylus member being longitudinally slidably supported in said guide means for coaxial, telescopic movement in said tubular member and housing member between an extended position in which the said lower end portion of said stylus member engages the interior of said lower end portion of reduced diameter of said housing member and protrudes outwardly through said lower end thereof, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end portion of said housing member, the said housing member being shaped to provide an annular clearance space of increased inside diameter within said housing member surrounding said stylus member intermediate said guide means and said lower end portion of reduced diameter of said housing member;

and resilent biasing means urging said stylus member toward said extended position, whereby the lower end of said lower end portion of said stylus member constitutes the writing instrumentality of said pen when so extended, and the lower end of said lower end portion of said housing member comprises the writing instrumentality of said pen when said stylus is so retracted;

such retraction being effected by pressing downwardly through said tubular member against said stylus member with sufficient force to overcome said biasing means.

18. Apparatus as defined in claim 17 and an aperture through the wall of said housing member interconnecting said annular clearance space with the exterior of said housing member.

19. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having an upper end adapted to be secured to said end of said hollow body;

a tubular housing member coaxially detachably secured to the lower end portion of said tubular member, said housing member having a lower end portion of reduced internal diameter relative to its upper end;

guide means in said tubular member;

a stylus member having a lower end portion of reduced diameter, said stylus member being longitudinally

slidably supported in said guide means for coaxial, telescopic movement in said tubular member and housing member between an extended position in which the said lower end portion of said stylus member engages the interior of said lower end portion of reduced diameter of said housing member and protrudes outwardly through said lower end thereof, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end portion of said housing member, the said housing member being shaped to provide an annular clearance space within said housing member surrounding said stylus member intermediate said guide means and said lower end portion of reduced diameter of said housing member;

an aperture through the wall of said housing member interconecting said annular clearance space with the exterior of said housing;

resilient biasing means urging said stylus member toward said extended position, whereby the lower end of said lower end portion of said stylus member constitutes the writing instrumentality of said pen when so extended, and the lower end of said lower end portion of said housing member comprises the writing instrumentality of said pen when said stylus is so retracted;

such retraction being effected by pressing downwardly through said tubular member against said stylus member with sufficient force to overcome said biasing means;

longitudinal duct means carried by said stylus member communicable at the upper end with said hollow body and communicating at the lower end with said lower end portion of said stylus member for providing a flow of ink therethrough from said hollow body to said lower end portion;

and means operative in conjunction with said duct means and actuatable by retraction of said stylus member for providing a normal flow of ink down said duct means from said hollow body when said stylus member is in said extended position and an increased flow of ink down said duct means from said hollow body when said fountain pen is pressed downwardly sufficient to depress said stylus member to said retracted position against the force of said biasing means.

20. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having an upper end adapted to be secured to said end of said hollow body;

a tubular housing coaxially detachably secured to the lower end portion of said tubular member, said housing having a lower end portion of reduced internal diameter relative to its upper end;

a stylus member comprising an inner elongated generally cylindrical body formed with a lower end portion of reduced diameter and one or more grooves extending longitudinally from the upper end to the said lower end portion of reduced diameter thereof, and an outer sleeve member attached to and covering said cylindrical body and such grooves;

guide means in said tubular member in which said sleeve member is longitudinally slidably supported,

whereby said stylus member is telescopically movable in said tubular member and said housing between an extended position in which the said lower end portion of said stylus member engages the interior of said lower end portion of reduced diameter of said housing and protrudes outwardly therethrough, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end portion of said housing, said housing being shaped to provide an annular clearance space between the surrounding interior of said housing and said sleeve member of said stylus member and extending intermediate said guide means and said lower end portion of reduced diameter of said housing, said grooves being communicable at their upper ends with said hollow body and communicating at their lower ends with said lower end portion of said stylus member for providing a flow of ink therethrough from said hollow body to said lower end portion;

an aperture through the wall of said housing member interconnecting said annular clearance space with the exterior of said housing;

and resilient biasing means urging said stylus member toward said extended position, whereby the lower end portion of reduced diameter of said stylus member constitutes the writing instrumentality of said pen when so extended, and the lower end of said lower end portion of said housing comprises the writing instrumentality of said pen when said stylus member is so retracted.

21. In a fountain pen, a pen structure adapted to be secured to an end of a hollow ink reservoir body, comprising:

a tubular member having upper and lower ends adapted to be secured at its upper end to said end of said hollow body;

a restrictedly perforate end closure member adjacent the upper end of said tubular member, forming a chamber therein;

a stylus member telescopically slidably movable within the lower portion of said tubular member and forming thereby a chamber of variable volume between said closure member and the top of said stylus member, said stylus member being thus movable between an extended position in which a lower end portion of said stylus member protrudes outwardly through said lower end of said tubular member, and a retracted position in which said lower end portion of said stylus member is retracted within said lower end of said tubular member;

resilient biasing means for constantly urging said stylus member to said extended position;

longitudinal duct means along said stylus member communicable at the upper end with said chamber and communicating at the lower end with said lower portion of said stylus member for providing a flow of ink therethrough from said chamber to said lower end portion;

said chamber and stylus member being operative in conjunction with said duct means by retraction of said stylus member for providing an increased flow of ink down said duct means from said hollow body when said fountain pen is pressed downwardly sufficiently to depress said stylus member to said retracted position against the force of said biasing means;

said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member constituting the principal writing instrumentality when said stylus member is in said retracted position.

22. Apparatus as defined in claim **12**, in which said longitudinal duct means comprises a groove extending longitudinally along a portion of the length of said stylus member.

23. Apparatus as defined in claim **13**, in which said longitudinal duct means comprises a groove extending longitudinally along a portion of the length of said stylus member.

24. Apparatus as defined in claim **14**, in which said longitudinal duct means comprises a groove extending longitudinally along a portion of the length of said stylus member.

25. In a fountain pen, a pen structure comprising:
a tubular member having an upper ink reservoir portion and a lower portion having a lower end opening;
a stylus member having a lower bifurcated nib portion mounted within said lower portion of said tubular member and telescopically slidably movable therein between an extended position in which a lower end portion of said nib portion protrudes outwardly through said lower end opening, and a retracted position in which said nib portion of said stylus member is retracted within said lower end portion of said tubular member;
resilient biasing means for constantly urging said stylus member to said extended position;
longitudinal duct means along said stylus member communicable at the upper end with said ink reservoir portion and communicating at the lower end with said nib portion of said stylus member for providing a flow of ink therethrough from said ink reservoir portion to said lower end portion of said stylus member;
and means operative in conjunction with said duct means and actuatable by retraction of said stylus member for providing a normal flow of ink down said duct means from said ink reservoir portion when said stylus member is in said extended position and an increased flow of ink down said duct means from said hollow body when said stylus member is retracted against the force of said biasing means;
said lower end portion of said stylus member constituting the writing instrumentality of said fountain pen when in said extended position, and said lower end of said tubular member comprising the writing instrumentality when said lower end portion of said stylus member is in retracted position.

26. In a fountain pen, a pen structure comprising:
a tubular member having a lower end opening;
a stylus member mounted within said tubular member for telescopically slidable movement therein between an extended position in which a lower end portion of said stylus member protrudes outwardly through said opening, sufficiently for said lower end portion of said stylus member to constitute the sole writing instrumentality of said pen when so extended, and a retracted position in which said lower end portion of said stylus member is retracted within the lower end of said tubular member, such that said lower end of said tubular member comprises the writing instrumentality of said pen when said stylus is so retracted, said lower end of said stylus member having a pair of parallel spaced apart nib members with the space therebetween capable of permitting ink to flow to the lowermost end of said stylus member, and duct means along said stylus for carrying ink downwardly to the space between the nib members;
and resilient biasing means for constantly urging said stylus member toward said extended position,
such retraction being effected by pressing downwardly through said tubular member against the lower end of said stylus member with sufficient force to overcome said biasing means.

27. Apparatus in accordance with claim 26 in which said duct means comprises a groove extending along a portion of the length of said stylus member.

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LAURENCE CHARLES, *Primary Examiner.*