Nov. 4, 1947. S. E. LONGMAID 2,430,023

WRITING IMPLEMENT

Filed Jan. 27, 1944 2 Sheets-Sheet 1

Fig.1.

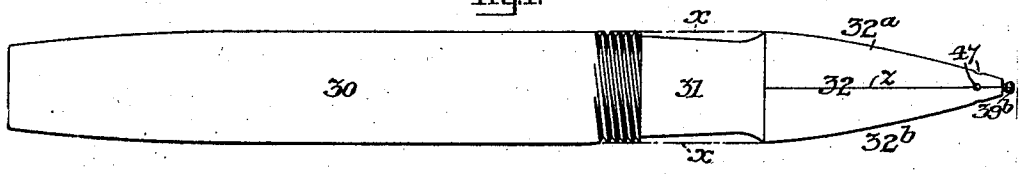


Fig.2.

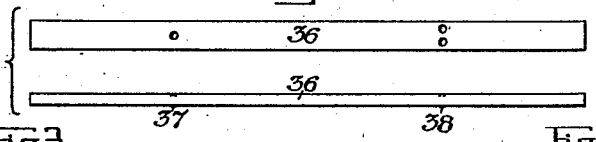


Fig.6a.

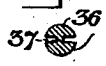


Fig.7a.

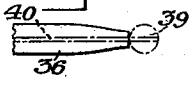


Fig.3.

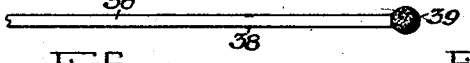


Fig.4.

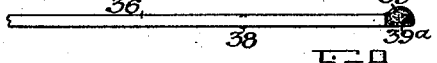


Fig.6.

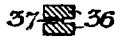


Fig.5.

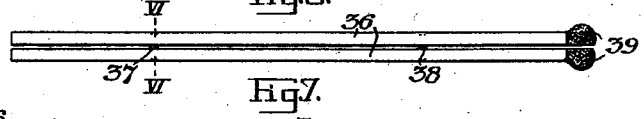


Fig.8.

Fig.7.

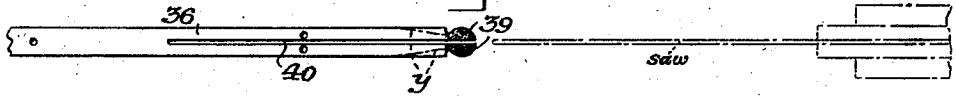


Fig.9.

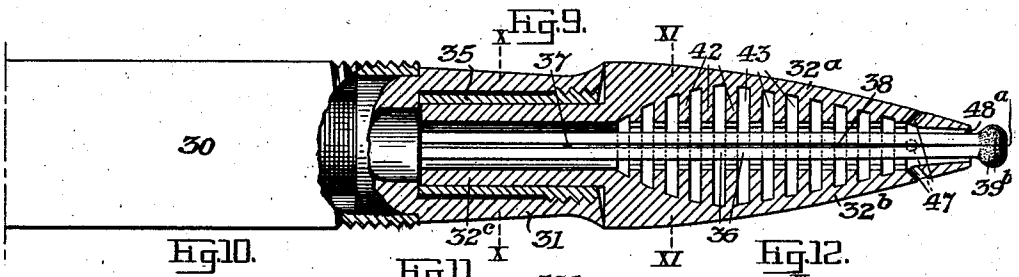


Fig.10.

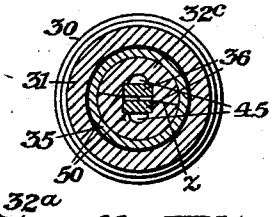


Fig.11.

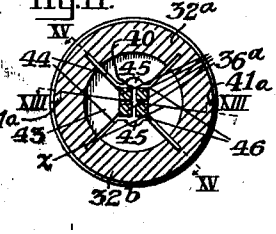


Fig.12.

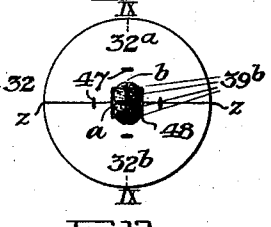


Fig.14.

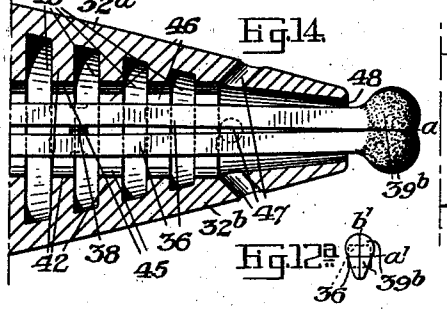
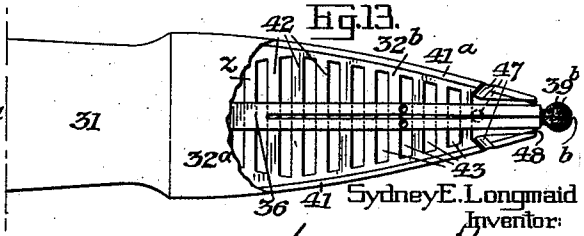


Fig.12a.

Fig.13.



Sydney E. Longmaid
Inventor:

by Murray & Boyer
Atty.

Nov. 4, 1947. S. E. LONGMAID 2,430,023

WRITING IMPLEMENT

Filed Jan. 27, 1944 2 Sheets-Sheet 2

Fig.15.

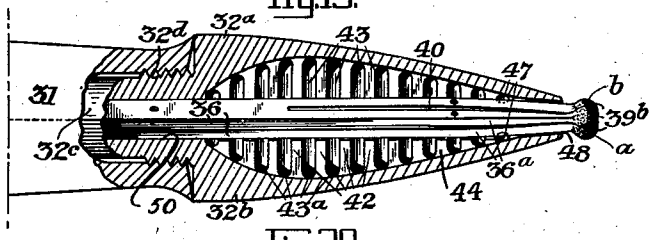


Fig.20.

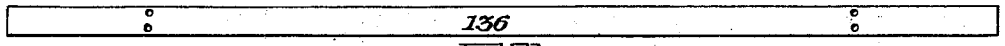


Fig.21.

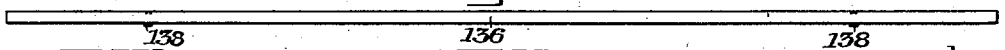


Fig.22a.

Fig.22.

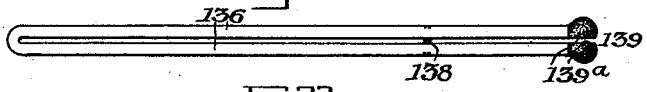


Fig.22b.

Fig.23.

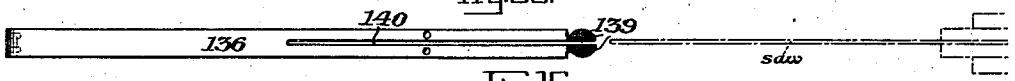


Fig.16.

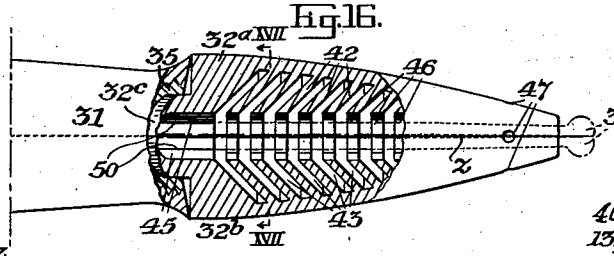


Fig.17.

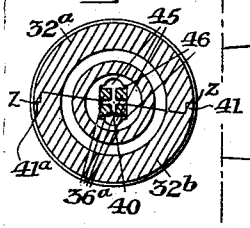


Fig.18.

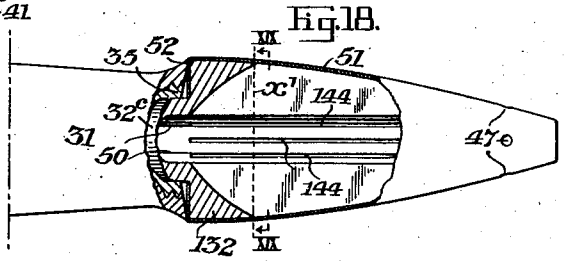


Fig.19.

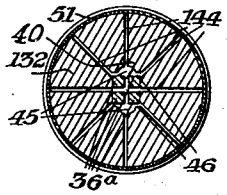


Fig.24b.

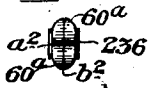


Fig.24.

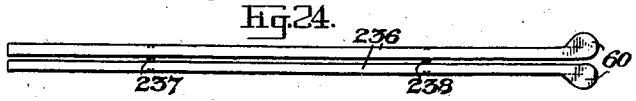


Fig.24a.

Fig.25b.

Fig.25.

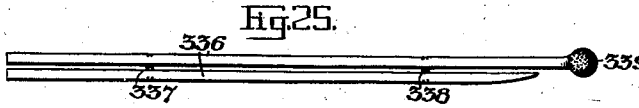


Fig.25a.

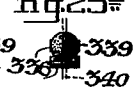
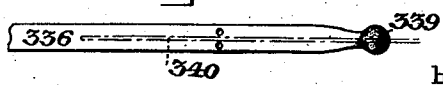


Fig.26.



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Inventor;

by Murray C. Boyer
Atty.

Patented Nov. 4, 1947 2,430,023

UNITED STATES PATENT OFFICE

2,430,023

WRITING IMPLEMENT

Sydney E. Longmaid, Rosemont, Pa., assignor to The Esterbrook Pen Company, Camden, N. J., a corporation of New Jersey

Application January 27, 1944, Serial No. 519,954

28 Claims. (Cl. 120—52)

1

My invention relates to writing implements and comprises an improved structure of the fountain pen type.

One object of my invention is to provide a novel and improved form of pen nib or writing point element.

A further object of my invention is to provide a novel and improved pen nib or writing point element having a plurality of and/or made up of a plurality of strips of pen metal arranged for mutual coöperation; which strips may be loosely or permanently assembled and associated with respect to a carrier mounting or support.

A further object of my invention is to independently tip such strips or pen metal with hardened writing points usually of metal and of the type commonly employed in the manufacture of various types of pen nibs or writing points.

A further object of my invention is to provide a novel and improved pen nib or writing point element having a plurality of paper-contacting portions whereby, in the use of the same in the operation of writing, lines of different character or thickness may be produced.

A further object of my invention is to provide an improved carrier mounting or support for the pen nib or writing point element.

A further object of my invention is to provide means whereby the carrier mounting or support for the pen nib or writing point element may be associated with or carried by a sleeve such, for instance, as those employed for unit inserts of the type carrying a feed-bar and pen nib.

A further object of my invention is to provide a carrier mounting or support for the improved pen nib or writing point element having provision for the care of excess or surplus ink which may reach the nib; whether in the act of writing or otherwise.

A further object of my invention is to provide the carrier mounting or support for the pen nib or writing point element with internal combs providing capillary spaces for the reception of ink whether surplus or not.

A further object of my invention is to provide the carrier mounting or support for the pen nib or writing point element with drainage fissures, preferably of a capillary character, with or without internally arranged cross passages or combs.

A further object of my invention is to provide a carrier mounting or support for the pen nib or writing point molded from a suitable type of thermosetting or thermoplastic material.

A further object of my invention is to provide a carrier mounting or support for the pen nib or writing point element made of a plurality of molded sections, usually two, which may be of an identic character and which are subsequently assembled with the pen nib or writing point element in permanent or non-permanent relation.

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A further object of my invention is to provide a carrier mounting or support, preferably of a molded plastic, having through drainage fissures of a capillary nature and to enclose such carrier mounting or support in a cover or sheath.

A further object of my invention is to provide a slotted carrier mounting or support providing drainage fissures, with a metal cover or sheath.

A further object of my invention is to provide the carrier mounting or support with capillary passages accommodating ink disposed adjacent to the pen nib or writing point element, together with air passages in proper relation with respect to the capillary ink passages.

A further object of my invention is to provide the carrier mounting or support, whether enclosed in a cover or sheath or not, with air passages adjacent the writing point end of same.

A further object of my invention is to provide a writing implement in which a feed-bar, in the commonly accepted sense, is omitted.

A further object of my invention is to provide a writing implement having a stream-lined and/or tapered contour at the forward or writing point end of the same.

And a still further object of my invention is to provide a simple and efficient writing implement; readily constructed and assembled, and readily separable for repairs or adjustment.

These and other features of my invention are more particularly set forth hereinafter; reference being had to the accompanying drawings, more or less diagrammatic in character, in which:

Figure 1 is a longitudinal elevation of one form of writing implement within the scope of my invention.

Fig. 2 represents a plan view and an edge elevation of a strip of pen metal which I may employ in the construction of one form of my improved pen nib or writing point element.

Figs. 3 and 4 are edge elevational views of the metal strip of Fig. 2; illustrating steps in the preparation of one form of my improved pen nib or writing point element.

Fig. 5 is an edge elevational view illustrating the positioning of a pair of strips such as those shown in Fig. 4 in the development of one form of improved pen nib or writing point element within the scope of my invention.

Fig. 6 is a sectional view on the line VI—VI, Fig. 5.

Fig. 6[a] is a sectional view somewhat similar to Fig. 6, illustrating a modified detail within the scope of my invention.

Fig. 7 is a fragmentary view in plan of the assembled strips shown in Fig. 5; illustrating a further step in the preparation of one form of my improved pen nib or writing point element.

Fig. 7[a] is a fragmentary view in plan; illus-

trating a modified detail within the scope of my invention.

Fig. 8 is a view in elevation of the writing point end of the duplex structure illustrated in Fig. 5.

Fig. 9 is a fragmentary view on a larger scale, partly in elevation and partly in section on the line IX—IX, Fig. 12, of the forward end of one form of my improved writing implement assembly with one form of my improved pen nib or writing point element in the proper relative position with respect to the same.

Figs. 10 and 11 are sectional views taken on the lines X—X and XI—XI, Fig. 9, respectively.

Fig. 12 is a front elevation of the writing implement illustrated in Figs. 1 and 9.

Fig. 12[a] is a front elevation illustrating a modified development of the paper-contacting portion of the pen nib or writing point element such as shown in Fig. 12.

Fig. 13 is a fragmentary view, similar in some respects to Fig. 9, but in which the plane of the sectional part is taken on the line XIII—XIII, Fig. 11.

Fig. 14 is a fragmentary sectional view on a still larger scale of the front end of the writing implement illustrated in Fig. 9, to bring out certain details of construction.

Fig. 15 is a fragmentary view, partly in section, which may be said to be taken on the line XV—XV, Fig. 11; illustrating details within the scope of my invention.

Fig. 16 is a fragmentary view somewhat similar to Fig. 15 and partly in section; illustrating a further modification within the scope of my invention.

Fig. 17 is a sectional view on the line XVII—XVII, Fig. 16.

Fig. 18 is a view similar to Fig. 16; illustrating a still further modification within the scope of my invention.

Fig. 19 is a sectional view on the line XIX—XIX, Fig. 18.

Fig. 20 is a plan view of a strip of pen metal from which a modified form of pen nib or writing point element within the scope of my invention may be produced.

Fig. 21 is an edge elevational view of the pen metal strip shown in Fig. 20.

Fig. 22 is an elevational view similar to Fig. 5; illustrating a step in the development of the pen metal strip shown in Figs. 20 and 21 into a modified form of pen nib or writing point element within the scope of my invention.

Figs. 22[a] and 22[b] are end elevational views of the structure shown in Fig. 22; illustrating details within the scope of my invention.

Fig. 23 is a view similar to Fig. 7; illustrating a step in the development of a modified form of pen nib or writing point element within the scope of my invention.

Fig. 24 is a view similar to Figs. 5 and 22; illustrating a step in the development of another form of pen nib or writing point element within the scope of my invention.

Fig. 24[a] is a view in elevation of the right hand end of the structure shown in Fig. 24.

Fig. 24[b] is an end view of the pen nib or writing point element shown in Fig. 24, in its finished state.

Fig. 25 is a view similar to Figs. 5 and 22; illustrating a further modification or other form of pen nib or writing point element within the scope of my invention.

Fig. 25[a] is a view in elevation of the right hand end of the structure shown in Fig. 25.

Fig. 25[b] is an end view of the pen nib or writing point element shown in Fig. 25, in its finished state.

Fig. 26 is a plan view of the structure shown in Fig. 25; illustrating a step in the development of such structure into a finished pen nib or writing point element within the scope of my invention.

It will be understood of course that any pen nib or writing point element of metal is of quite small area in cross section and, in fact, in all dimensions. In view of this it has been necessary to greatly enlarge and, in some respects, to exaggerate the size of the pen nib or writing point element forming the subject of my invention, as well as the carrier mounting or support for the same and its details of construction, as illustrated in the accompanying drawings. I do not therefore desire to be limited to any of the dimensions indicated nor any relation incompatible with good fountain pen practice.

In Figure 1 of the drawings, which shows an elevational view of my improved writing implement, the pen barrel is indicated at **30** and, in this instance, has a pen section **31**, from which extends a streamlined and/or tapered carrier mounting or support containing the improved pen nib or writing point element, more particularly pointed out hereinafter. It is within the scope of my invention to substitute a pen section of a different type than those usually employed with fountain pens and as shown in order that a complete streamlined and/or tapered effect may be produced, as indicated by the broken lines *x*, Figure 1. Also, it is within the scope of my invention to associate my improved stream-lined and/or tapered carrier mounting or support at the forward end of the writing implement and containing a pen nib or writing point element of the character hereinafter set forth with forms of pen barrels which omit the pen section such as indicated at **31**. In this connection I have reference to types of writing implements or fountain pens which are provided with ink by means other than the compressible rubber sac usually employed as an ink reservoir.

The barrel **30** may be of any usual type and of any material common in the art. While this barrel is shown in Figs. 1, 9, et seq., as provided with a pen section **31** to which the carrier mounting or support is attached—a construction common to fountain pens having a sac reservoir for the reception of ink—the pen section may be omitted and the carrier mounting or support such as that indicated at **32**, with or without other connected parts, may be introduced directly into the end of the pen barrel **30**, as indicated in Fig. 15. The carrier mounting or support at the forward end of the writing implement may be fitted to the pen structure—barrel **30** or pen section **31**—directly, by a threaded engagement or otherwise, but in Figs. 9, 16 and 18, I have shown the carrier mounting or support **32** associated with a sleeve **35**, of a type such as those employed with unit inserts for fountain pens which include a feed-bar and a pen nib. These "unit insert" sleeves are usually in threaded engagement with the pen section, or with the end of the barrel, when employed with fountain pens.

My improved pen nib or writing point element is of a peculiarly novel character and one form of the same may be developed in the following manner.

In Fig. 2 I have shown plan and edge views of a strip of pen metal, which may be of any suitable nature or character including stainless steel and

whose gauge may be within the range of any of those commonly employed in the manufacture of writing pens or nibs for fountain pens, or of any other gauge that will permit of development in accordance with that part of my invention.

This strip may be cut from a band of pen metal; stamped from any character of pen metal sheet, or otherwise prepared. In its preparation, usually by a die cutting operation, small protuberances are produced for a purpose to be described. The strip is indicated at **36**, and the protuberances are indicated at **37** and **38**; a pair of the latter being shown, for a purpose hereinafter set forth.

To the end of a strip of predetermined and desired length I secure, preferably by a suitable welding operation which may be an electric weld, a hard writing point **39**, as illustrated in Fig. 3—of any wear material common in the art—and I then grind or otherwise face one side of the same flush with one surface of the strip, as indicated at **39a**; producing the structure illustrated in Fig. 4. I then take a pair of strips prepared in the manner set forth and as illustrated in Fig. 4, place them with the flattened point surfaces in juxtaposed relation as illustrated in Fig. 5, with the several protuberances in contact to properly space the strips with respect to each other, and I may then weld the protuberances **37** together; leaving the protuberances **38** in loose contact. The spacing between the strips effected by the presence of the protuberances is designed to be of a capillary dimension.

After the welding operation securing the strips together, the duplex structure illustrated in Fig. 5 is turned over and the broader dimension may be presented to a saw, indicated by the broken lines, Fig. 7, which saw serves to slit the duplex strip for a predetermined distance, as indicated at **40** in said view; such slit, which passes between the protuberances **38**, being also intended to be of a capillary dimension and of the same width as the spacing defined by the protuberances. A cross sectional view of the duplex strip taken through the welded protuberances **37** on the line VI—VI, Fig. 5, is illustrated in Fig. 6; such view showing the structure to be substantially square. It is within the scope of my invention to round this duplex strip structure, as illustrated in the cross sectional view, Fig. 6a.

Inasmuch as the width of the strip **36** is somewhat greater than its thickness, it may be desirable to taper the end of the same receiving the hardened writing point before application thereof in the manner indicated by the broken lines *y*, Fig. 7, or the full-line illustration in Fig. 7a.

It will be understood that prior to the slitting operation, the strips are in proper position with respect to each other—longitudinally as well as transversely—and that after the sawing has been completed as illustrated in Fig. 7, the duplex strip to form the novel pen nib or writing point element will comprise four prongs **36a**; each having a portion of a hardened writing tip **39b**.

Before the improved pen nib or writing point element is assembled with the carrier mounting or support to produce the improved writing implement, the forward ends of the same are "raised" or otherwise operated upon to bring the hardened writing points into contact so as to complete the structure and establish its writing abilities. Inasmuch as in practice the writing implement will be used with the broader faces of the strips **36** constituting the pen nib or writing point element in a substantially vertical position, there is full opportunity for the pen nib or writing point element to flex, and its disposal within the carrier mounting or support with its open end permits further movement at this point, assisted by the presence of a space or spaces within the carrier mounting or support for the passage of air and/or ink.

Upon reference to Fig. 12, which shows an end elevation of the forward portion of the writing implement, it will be observed that the hardened paper-contacting portion of the pen nib or writing point element is slit in two directions; the horizontal slit, indicated at *a*, representing the separation between the pair of pen metal strips **36** making up the same while the vertical slit, indicated at *b*, represents the separation effected by the sawing operation. Except for the smoothing of any rough edges that may be present, no other operation is performed with respect to the paper-contacting portion save the "raising" or other step to bring the hardened portions into contact or engagement, as above noted. While, normally, the writing may and probably will be effected by the narrower portions of such end, it is possible to make broad strokes with the sides of the same though, perhaps, not as effectively as with the narrower portions.

It is possible, however, to further shape this paper-contacting portion of the pen nib or writing point element and in Fig. 12a I have shown one of the forms in which such shaping may be developed and wherein the end of the hardened nib portion, looking toward the same from the front, is shown as substantially oval or egg-shaped. This view is unshaded to preserve clearly the distinction between the form of writing portion shown thereby and the form illustrated in Fig. 12. The broader portion, at the top of the illustration Fig. 12a, will produce a line or stroke like either of the narrower portions of the form illustrated in Fig. 12, while the narrower portion at the bottom of such illustration will produce a fine or relatively narrow line; thus providing, in the one point, for two types of writing. This form of the point is slit horizontally and vertically as indicated at *a'* and *b'*; such slits corresponding to the slits *a* and *b*, respectively, of the point illustrated in Fig. 12. It will be understood, of course that the inclined sides of the point shown in Fig. 12a will not usually be employed in writing operations due to their obliquity.

In the further carrying out of my invention a pen nib or writing point which may be made in the manner above set forth is assembled with a carrier mounting or support which may have a stream-lined and/or tapered contour, as indicated at **32**. This carrier mounting or support is preferably sectional in character and internally shaped to receive the pen nib or writing point element. I may, in some instances, employ a substantially solid carrier mounting or support with a longitudinal bore or passage into which the pen nib or writing point element may be introduced; preferably from the front.

The carrier mounting or support **32** for the pen nib or writing point element may be made of any suitable plastic common in the arts—particularly the fountain-pen art—thermosetting or thermoplastic; perhaps of other materials in some instances, such as dense wood or other fibrous bodies. It is preferably molded from a suitable and available plastic and while it may be in one piece in some instances, as hereinafter pointed out, it is preferably sectional. While it may be in several parts, it is more conveniently in two parts and as these are fitted together for coop-

erative engagement with the pen nib or writing point element disposed between the same, they may be of an identic character as to shape; being designed to fit together in exact relationship. While many ways of securing these sections to gether may be employed, they are preferably cemented with a bonding agent unaffected by and unaffecting the ink and of a nature that will hermetically seal the joint or joints between the sections but, at the same time, of such character as to permit separation under conditions requiring repair or adjustment of the pen nib or writing point element. In addition to the cementing together of the sections, they may be pinned. It is also within the scope of my invention to effect union of these sections by the agency of heat after the pen nib or writing point element has been properly positioned to function in the operation of writing. It is also within the scope of my invention to lacquer or otherwise coat the carrier mounting or support for the purpose of embellishment or to hide the joint or joints, and it is also within the scope of my invention to enclose the carrier mounting or support within a shell or covering sheath, which may be of a plastic or of metal—a precious metal, for instance.

One form of sectional carrier mounting or support within the scope of my invention is shown in elevation and partly in section in Fig. 9, and in cross section in Figs. 10 and 11. In this instance, the sections of the carrier mounting or support are indicated at 32ª and 32ᵇ, and the line of original division between the same is indicated at *z*, Figs. 10 and 11. In this instance the carrier sections have a flange 41 at one edge which seats in a recess 41*a* at the opposite edge of the respective sections. This arrangement, though not essential and may be omitted, is of value in the operation of connecting a pair of sections with the contained pen nib or writing point element to complete the development of that much of the writing implement. Internally the several sections will be provided with capillary spaces for the flow of air and/or ink and for the storage of excess ink and for drainage purposes; all as more or less necessary for proper operation of the writing implement.

In the structure shown in Fig. 9 a series of transverse partitions or combs, 42, provide capillary spaces 43 between the same; such spaces serving to receive any excess or surplus ink and avoid all danger of leakage in the operation of writing, or otherwise. In addition to these cross capillary spaces 43, it may be desirable to provide the carrier mounting or support with longitudinal drainage fissures, which are indicated at 44, Figs. 11 and 15; such fissures permitting air to pass to the capillary spaces 43 and assisting the return of ink to the reservoir when the act of writing is ended and the writing implement is laid aside or carried in the pocket of the user. It seems unnecessary to note that these cross capillary spaces as well as the longitudinal fissures provide for the storage of ink which may be lifted to the carrier mounting or support by elevations in temperature; whether due to the hand of the user; transport in his pocket or otherwise carried, or for any other reason. At the same time, the presence of these capillaries in the carrier mounting or support insures the presence of ink—the desired wetting of the pen nib or writing point—when commencing the act of writing.

In addition to the cross passages 43 and the

longitudinal fissures 44, the sections of the carrier mounting or support are provided with other capillaries for cooperation with the pen nib or writing point element carried by the same; one set of such capillaries being indicated at 45, and the other set at 46, both extending longitudinally of the carrier mounting or support. The forward end of the carrier mounting or support may be provided with openings 47 for the admission of air to replace the ink drawn from the reservoir of the writing element and passing to the paper-contacting end of the pen nib or writing point element, while the forward end of the carrier mounting or support has an opening 48 for the passage of the pen nib or writing point element of sufficient size to permit a certain amount of flexing of the pen nib or writing point element in the act of writing. It may be unnecessary, in view of this opening 48, which will to a certain extent at least permit the entrance of air to take the place of the displaced ink, to provide the special openings 47.

In assembling the pen nib or writing point element with the carrier mounting or support, the rear end of the former is laid in the recess 50—either one—at the stem end of one of the sections as indicated in Figs. 9 and 10; the substantially square shank portion of such pen nib or writing point element snugly fitting the recesses of the sections as indicated more particularly in Fig. 10. In this connection it may be noted that it is within the scope of my invention to employ a writing point element or pen nib having a rounded stem or shank portion, as illustrated in Fig. 6*a*, and to provide the stem portions of the respective sections of the carrier mounting or support with rounded recesses to receive the same.

Above and below the pen nib or writing point element are the longitudinal capillaries or spaces 45, one of which may function for the passage of ink and the other for the passage of air to the reservoir as the ink is used. These capillaries extend from end to end of the carrier mounting or support. In addition there may be capillary spaces 46 disposed opposite or cutting through the combs or cross partitions 42 and extending to the openings 47 adjacent the forward end of the carrier mounting or support, or all of these longitudinal capillaries may extend to the opening 48 at the forward end of the same.

In the form of carrier mounting or support shown in Fig. 9, the sections of the same have reduced rear ends forming a stem 32ᶜ and this stem, in this instance, is associated with a sleeve 35, such as those employed with the so-called "unit inserts" employed with some forms of fountain-pens. This stem may be permanently attached to the sleeve or be in frictional engagement therewith, and the said sleeve may be in threaded engagement with the pen section 31, as indicated in Fig. 9, or in frictional engagement therewith. It is within the scope of my invention to connect this sleeve directly with the barrel 30 of the writing implement in those instances where a pen section is omitted. The sleeve 35 may be of a suitable metal, or of any of the synthetic or other plastics commonly employed in the arts—particularly the fountain-pen art.

The shank portion of the pen nib or writing point element may be clamped in the recesses 50 in the stem portion of the carrier mounting or support sections and as it should occupy a fixed position with respect to the same so as to avoid all danger of being displaced longitudinally

during a writing operation, it may be pinned in place. In lieu of this, oppositely disposed protuberances may be struck up from the pen metal employed in its construction and arranged for disposal at the shank portion of the pen nib or writing point element so as to be embedded in the body of the carrier mounting or support in the assembly thereof; an arrangement readily available and particularly if a heat treatment is involved in the assembly of the sections of the carrier mounting or support.

In Fig. 13 I have shown a fragmentary view, partly broken away on the line of original separation between the sections of the carrier mounting or support; showing also the flange 41 and the recess 41a, of the section 32b, which cooperate with similar portions of the section 32a. Fig. 14 is an enlarged view, fragmentary in character, of the forward end of the structure illustrated in Fig. 9, to bring out clearly the touching protuberances 38 of the strips 36, and the cross partitions 42 of the internal comb providing the capillary spaces 43.

Fig. 15 is a view somewhat similar to Fig. 9, but the section is on the line XV—XV, Fig. 11, in the plane of a pair of the longitudinal fissures 44, and it discloses a modification within the scope of my invention. In this arrangement, the stem 32c of the carrier mounting or support is shown as threaded at 32d for threaded engagement with the pen section 31, instead of employing a sleeve such as indicated at 35, Fig. 9. It is also within the scope of my invention to connect a carrier mounting or support of this type directly with the barrel of the writing implement without the use of a pen section. In this view the roots of the capillary spaces 43 are illustrated as being rounded, as indicated at 43a.

In Figs. 16 and 17 I have shown a further modification of the carrier mounting or support, wherein the internally arranged transverse capillary spaces are shown as inclined from the outer surface of the same toward the central bore receiving the pen nib or writing point element to facilitate drainage of ink when the writing implement is not in use. In this view the pen nib or writing point element is shown by dotted lines. Fig. 17 is a cross sectional view on the line XVII—XVII, Fig. 16, and in this view the pen nib or writing point element is shown as occupying its proper position with respect to the recesses 50 of the sections making up the carrier mounting or support.

In Figs. 18 and 19 I have shown a carrier mounting or support in the form of a single piece, indicated at 132. This will have a longitudinal bore or passage for the reception of the pen nib or writing point element, which may be introduced from the front end of the same. For the sake of clarity, the pen nib or writing point element is omitted from Fig. 18. A series of longitudinal fissures 144—in the present instance four—are cut through the forward portion of this member; an operation that may be effected by a saw or other suitable cutting instrument or these fissures may be developed during the molding operation. If sawn or otherwise cut, the original cuts may extend substantially to the line x', and the balance of the fissures, which may slope toward the central bore, may be broached or cut by a suitable tool and in any suitable manner. As the fissures 144 cut through the surface of the member 132, it is substantially necessary to enclose the same in a sheath or cover, which is indicated at 51. This sheath or cover, which should be relatively thin, may be made from a plastic material or from metal—one of the precious metals, for instance. This sheath or cover will be turned in behind the shoulder of the carrier mounting or support, as indicated at 52. Other ways of securing this sheath or cover in place may be adopted and it is within the scope of my invention to thread the rear end of the sheath or cover and to thread the rear portion of the carrier mounting or support to engage the same. Any manner of insuring that this sheath or cover shall hermetically seal the fissures 144 cut through the body of the single-piece carrier mounting or support, is within the scope of my invention. It is also within the scope of my invention to seal the outer openings of these fissures before the sheath or cover is applied. In Fig. 19, which is a cross section taken on the line XIX—XIX, Fig. 18, the pen nib or writing point element is shown in its proper position with respect to the central bore or passage of the carrier mounting or support. While I have shown four longitudinal fissures 144, it is within the scope of my invention to employ a greater or a lesser number in order to provide sufficient storage space and/or drainage facilities for the ink.

In other respects, the forms of carrier mounting or supports illustrated in Figs. 16, 17, 18 and 19 will be like the form illustrated in Fig. 9 as to the longitudinal capillary spaces adjacent the pen nib or writing point element and the air openings and, with respect to the structure shown in Figs. 16 and 17, transverse partitions or combs and transverse capillary spaces. These forms of the carrier mounting or support are shown as associated with a sleeve 35 which may be in threaded engagement with the pen section, as indicated, or with the barrel of the writing implement.

Other forms of pen nibs or writing point elements are within the scope of my invention and in lieu of the form of construction illustrated in Figs. 2 to 8, inclusive, I may provide a form of pen nib or writing point element of the type and in the manner illustrated in Figs. 20 to 23, inclusive.

In Figs. 20 and 21 I have illustrated at 136 a strip of pen metal of suitable gauge, which may be cut or stamped from metal stock in the usual manner and, while being blanked or otherwise, is provided with pairs of protuberances 138 disposed adjacent each end; the latter being cut squarely at right angles to the longitudinal axis of the strip. This strip is intended to be just twice the length of the strips 36 shown in Figs. 2, 3, et seq. At each end of the strip 136 I secure, as by welding or otherwise, a piece of hardened material—metal or other body—as indicated at 139 to form the paper-contacting portion of the pen nib or writing point element. These hard portions are faced off at 139a in a manner similar to the facing imparted to the hardened material as illustrated in Fig. 4, and then the elongated strip 136 is bent to form the structure illustrated in Fig. 22, with the spacing between the plies of the same of a capillary dimension and with the protuberances 138 in loose engagement. To provide the additional capillary space or spaces, the folded strip shown in Fig. 22 is turned over at right angles to such position and saw slit as indicated at 140, Fig. 23, in the same manner as illustrated in Fig. 7.

The form of pen nib or writing point element illustrated in Figs. 22 and 23 may be employed in the same manner as that illustrated in Fig. 9, but in such folded condition it may be necessary to pierce the bend in order to facilitate passage

of ink and/or air to and from the reservoir of the writing implement. This piercing may be in the form of a single aperture 55, which may be drilled as indicated in Fig. 22a, or slits may be cut through the bend in any suitable manner, as indicated at 56, Fig. 22b. The hardened tip of this form of the pen nib or writing point element may be treated in the same manner as the tips illustrated in Figs. 12 and 12a.

Other forms of writing point elements are within the scope of my invention, and in Figs. 24, 24a and 24b I have shown a form of pen nib or writing point element made from pen metal stock such as that disclosed in several prior patents of Leon Hehl Ashmore, Nos. 2,037,699; 2,159,002; 2,159,003 and 2,228,250. This metal stock is provided with a thickened edge, indicated at 60, and two strips of the same, indicated at 236 and which may have protuberances 237 and 238 struck up from the same may be placed in juxtaposed relationship, and the protuberances 237 welded together; those indicated at 238 being unconnected as in the other forms of pen nibs or writing point elements hereinabove described. These protuberances space the strips for the desired capillary action in use. Fig. 24a shows an end view of the structure illustrated in Fig. 24, and the dotted lines represent the application of a saw slit at right angles to the broad faces of these strips to form the additional capillary spacing. Fig. 24b shows the end of the structure developed into a writing tip or paper-contacting portion. The thickened edge projections 60 may be rounded as indicated at 60a and brought together by a raising or other operation, as indicated; the slits between the parts of said tip being indicated at a^2 and b^2. This form of tip will provide a plurality of writing points.

In Figs. 25, 25a, 25b and 26 I have shown still another form of pen nib or writing point element within the scope of my invention. In this structure I may employ a pair of pen metal strips 336, with protuberances 337 and 338 produced in a manner similar to that hereinbefore described; the protuberances 337 being welded together and the protuberances 338 being unconnected. In this instance, I make use of one strip only in the formation of the writing tip end of the pen nib or writing point; the other strip being tapered off at its forward end and underlying the upper strip short of the end to which the hardened tip material, 339, is applied—a single element. If desired, this upper strip carrying the hard tip may have a tapered end, of the character illustrated in Fig. 26, following the form illustrated in Fig. 7a, and after the welding operation to secure such hard tip in place, this strip may be slit as indicated by the dotted lines at 340, Figs. 25a and 26. The finished paper-contacting end of the pen nib or writing point element is illustrated in Fig. 25b and this end, after the "raising" or other operation imparted thereto to bring the portions of the hard tip material together will have a single vertical slit, indicated at b^3; providing two paper-contacting portions. This hardened point may be developed into a writing tip of the character illustrated in Fig. 12a, but without the horizontal slit.

While I have referred to the welding of the protuberances at the shank portion of the pen nib or writing point element (37, 137, 237 or 337) it is within the scope of my invention to so connect the metal strips making up these pen nibs or writing point elements with the sections of the carrier mounting or support as to independently embed or otherwise secure the same therein in proper relative position so that when these sections are assembled and fastened together, the several protuberances will be in registry to assure the desired capillary spacing between the strips. Such arrangement, of course, will bring the writing tip ends of the respective strips making up the pen nib or writing point element in exact registry.

It will be understood that all forms of the pen nib or writing point element illustrated and described may be employed with any of the forms of carrier mountings or supports illustrated and described. It will also be understood that all of the forms of the pen nib or writing point element illustrated and described may have the shank and/or stem portion rounded in a manner similar to that illustrated in Fig. 6a.

It will be further understood that while I have shown and described the type of carrier mounting or support illustrated in Figs. 18 and 19 as having a sheath or cover in order that the through cuts 144 defining the fissures may be hermetically sealed, it is within the scope of my invention to enclose any or all of the forms of carrier mountings or support described and illustrated in the drawings in sheaths or covers which, in addition to any functional purpose, will serve to embellish or ornament the forward portion of the writing implement.

While I desire to employ a carrier mounting or support having a stream-lined and/or tapered contour, the dimensions of the same may differ from anything illustrated in the drawings or herein described; that is to say, it may be narrower or thicker—depending upon the diameter or bulk of the writing implement—and it may be relatively longer or shorter as conditions or circumstances, particularly those pertaining to design, may warrant. While the carrier mounting or support of the preferred type is sectional, the one-piece type illustrated in Figs. 18 and 19 is entirely practical and it is also within the scope of my invention to annularly groove this type of structure; such grooves to be of capillary dimensions and in communication with the longitudinal fissures 144 and enclosed by the sheath or cover.

The dimensions of the several capillary spaces may be altered without departing from my invention and it will be clearly understood that, in view of the small dimensions of the parts involved, the several views of the drawings are greatly enlarged and more or less exaggerated in order to clearly define the subject-matter of my invention.

It will also be understood that while I prefer to employ the novel form of pen nib or writing point element illustrated in the accompanying drawings and described herein with the novel form of carrier mounting or support also shown and described, that I do not wish to be limited to the same since other forms of pen nibs or writing point elements may be employed without material change in the disposal of the same within the novel carrier mounting or support and/or in relation to the several capillary spaces therein. It is within the scope of my invention to omit the special air inlets 47 at the forward end of the carrier mounting or support and depend upon the opening 48 at the end of the same through which the writing tip extends for the inlet of air as ink is displaced from the reservoir of the writing implement. This opening 48 is shown as substantially rectangular in view of the rectangular shape of the pen nib or writing point

element. It is within the scope of my invention to make this opening round especially if the shank or stem of the pen nib or writing point element is rounded as indicated in Fig. 6a, or when a pen nib or writing point element of the character illustrated in Figs. 25 and 26 is employed.

The longitudinal drainage fissures 44, illustrated in Fig. 11 are shown as angularly disposed with respect to the plane of original separation between the sections. It is within the scope of my invention to arrange one pair of these fissures in the plane of original separation of the sections and to provide the other pair at right angles thereto or in any other convenient position that will facilitate their production in a molding operation.

While I have illustrated and have described with some particularity a number of ways in which my invention may be carried into effect, this disclosure is for illustrative purposes only and not as a limitation inasmuch as many modifications may be made embodying the spirit of my invention; all of which is deemed to be within the scope of the appended claims.

I claim:

1. A writing element for association with a writing implement of the fountain pen type, comprising a pair of metal strips disposed in capillary spaced relation, and hardened paper-contacting tips carried at the ends of said strips.

2. A structure as set forth in claim 1 wherein the strips present a substantially rectangular cross section with a capillary space between their broad faces, the provision of a second capillary space cutting through the broad faces of said strips at substantially a right angle to the capillary space between the strips.

3. A writing element comprising a member having a plurality of prongs in integral relation; said element being slit to provide capillary passages between the prongs, and a hardened tip for each of said prongs disposed in capillary relation with respect to each other.

4. A writing element or pen nib made up of a pair of metal strips having protuberances which separate them in the desired capillary relation; one group of said proturbances being permanently secured together and the capillary space provided by the same lying in one plane; said element having a second capillary space lying in a plane at right angles to the first-mentioned plane.

5. A writing implement comprising a tapered carrier mounting for engagement with the pen section or barrel of a fountain pen; said carrier mounting having a longitudinal passage and capillary spaces communicating with said passage, and a pen nib or writing point element arranged within said passage and projecting through the forward end of the carrier mounting.

6. A carrier mounting or support made up of mating half sections permanently secured together; said sections being internally provided with transverse capillary spaces and a longitudinal passage communicating with said spaces, and a pen nib or writing point arranged within said longitudinal passage in cooperative relation with said transverse capillary spaces.

7. A carrier mounting or support made up of mating half sections permanently secured together; each of said sections being internally provided with transverse capillary spaces and a longitudinal groove which together form a passage for the movement of air and ink, and a pen nib or writing point arranged within said passage and in cooperative relation with said transverse capillary spaces.

8. A writing implement comprising a carrier mounting or support, and a pen nib or writing point element disposed longitudinally within the same; said carrier mounting or support having capillary fissures longitudinally disposed and cooperating with the pen nib or writing point element.

9. A writing implement as set forth in claim 8 wherein the carrier mounting or support is made of molded sections secured together and enclosing the pen nib or writing point element.

10. A structure as set forth in claim 6, in combination with a sleeve to which the carrier mounting is attached; said sleeve receiving reduced ends thereof and forming means whereby said carrier mounting may be attached to the pen section or barrel of a fountain pen.

11. A writing implement comprising a carrier mounting or support having capillary fissures cutting through the wall of the same and a central longitudinal passage communicating with said fissures, a pen nib or writing point element arranged within said central passage, and a cover or sheath enclosing said carrier mounting or support and sealing said fissures.

12. As a new article of manufacture, a pen nib or writing point element comprising a metal strip of substantially regular cross sectional area having the greater portion of its length separated by capillary passages disposed at right angles to each other and forming independent prongs, and a wear-resisting writing tip carried by each of said prongs.

13. A writing implement comprising a carrier mounting or support of molded half sections; said sections being provided with transverse capillary passages and each longitudinally grooved whereby a central passage is provided when the sections are secured together, and a pen nib or writing point element fixed in said sections and projecting through one end of said passage; said pen nib substantially occupying said central passage and said carrier mounting or support having capillary spaces disposed adjacent said pen nib for the passage of ink and/or air.

14. The combination with a barrel forming a reservoir for ink, of a carrier mounting or support arranged in the end of said barrel and in communication with said ink reservoir; said carrier mounting being internally provided with capillary spaces for the movement and/or storage of ink and having a longitudinal passage, a pen nib or writing point element arranged within the longitudinal passage of said carrier mounting and cooperating with said capillary spaces; the forward end of said longitudinal passage being of a size permitting flexing of said pen nib or writing point element in the operation of writing, and a sheath or cover enclosing said carrier mounting or support.

15. A structure as set forth in claim 14 wherein the carrier mounting or support is in half sections secured together and each providing substantially one-half of the longitudinal passage.

16. A writing implement comprising a barrel forming a reservoir for ink, a tapered carrier mounting or support carried by the forward end of the same and having a central longitudinal passage, a pen nib or writing point element arranged within said central passage, and transversely arranged combs extending outwardly from said passage and providing capillary spaces

transversely of the carrier mounting or support and coöperating with said pen nib or writing point element.

17. In a writing implement, a carrier mounting or support having longitudinal fissures cut through the same and a central longitudinal passage communicating with said fissures, in combination with a pen nib or writing point element arranged within said central passage, and a cover or sheath enclosing said carrier mounting or support and sealing said fissures.

18. A pen nib or writing point element for association with a writing implement of the fountain pen type, comprising a pair of metal strips secured together adjacent one end and free to flex independently at the opposite end; said strips being disposed in capillary spaced relation, and enlarged paper-contacting tips carried at the free ends of said strips.

19. The production of a writing element which comprises mounting a pair of pen metal strips in spaced relation; securing wear-resisting tips to each of said strips which tips are brought into spaced relation when the strips are secured together; welding the strips in the spaced relation; such space forming a capillary passage for the distribution of ink and lying in one plane, and thereafter slitting the strips a predetermined distance from and through the wear-resisting tips to form an additional capillary passage at right angles to the space separating the strips.

20. A writing element for association with a writing implement of the fountain pen type comprising a pair of narrow metal strips having protuberances arranged to maintain them in capillary spaced relation, and paper-contacting tips carried at the ends of said metal strips.

21. A writing implement comprising a barrel forming a reservoir for ink, a tapered carrier mounting or support arranged in the forward end of the same and having a central longitudinal passage, a pen nib or writing point element arranged within said central passage and comprising a pair of metal strips spaced in capillary relation, and transversely arranged combs extending outwardly from the central passage of said carrier mounting and providing capillary spaces coöperating with the capillary spaces of the pen nib or writing point element.

22. A structure as set forth in claim 21 wherein the metal strips constituting the pen nib or writing point element have hardened paper-contacting tips at their ends.

23. A writing implement comprising a barrel forming a reservoir for ink, a tapered carrier mounting or support arranged in the forward end of the same and having a central longitudinal passage, and a pen nib or writing point element arranged within said central passage and comprising a pair of metal strips spaced in capillary relation; said carrier mounting being internally provided with capillary spaces coöperating with the capillary spaces of the pen nib or writing point element.

24. A structure as set forth in claim 23 wherein the metal strips constituting the pen nib or writing point element have hardened paper-contacting tips at their ends.

25. A writing implement comprising a barrel forming a reservoir for ink, a carrier mounting or support arranged in the forward end of the same and having a central longitudinal passage, a pen nib or writing point element arranged within said central passage and comprising a pair of metal strips spaced in capillary relation in one plane; said pen nib or writing point element having another capillary space in a plane at right angles to the first-mentioned space, and transversely arranged combs extending outwardly from the central passage of the carrier mounting and providing capillary spaces coöperating with the capillary spaces of the metal strips forming the pen nib or writing point element.

26. A structure as set forth in claim 25 wherein the metal strips constituting the pen nib or writing point element have hardened paper-contacting tips at their ends.

27. A writing implement comprising a tapered carrier mounting for engagement with the pen section or barrel of a fountain pen; said carrier mounting being internally recessed to provide capillary spaces for the reception and/or storage of ink, and a pen nib or writing point element arranged longitudinally within the carrier mounting and projecting through the forward end of the same.

28. A writing implement comprising a barrel forming a reservoir for ink, a carrier mounting or support arranged at the forward end of the same and having a central longitudinal passage and capillary fissures extending lengthwise of said carrier mounting and communicating with said central passage, a pen nib or writing point element arranged within said central passage and comprising a pair of metal strips spaced in capillary relation in one plane; said pen nib or writing point element having another capillary space in a plane at right angles to the first-mentioned space, and transversely arranged combs extending outwardly from the central passage of the carrier mounting and providing capillary spaces in communication with the longitudinal capillary fissures and coöperating with the several capillary spaces of the metal strips forming the pen nib or writing point element.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,011,516	Funk	Aug. 13, 1935
2,149,557	Snodgrass	Mar. 7, 1939
776,951	Sinnott	Dec. 6, 1904
2,329,996	Lubrani	Sept. 21, 1943
2,316,478	Weigel	Apr. 13, 1943
1,284,525	Wing	Nov. 12, 1918
1,335,580	Hayes	Mar. 30, 1920
1,917,185	Sypher	July 4, 1933
2,252,907	Winter	Aug. 19, 1941
2,305,287	Weigel	Dec. 15, 1942
2,316,479	Weigel	Apr. 13, 1943
2,328,116	Weigel	Aug. 31, 1943

FOREIGN PATENTS

Number	Country	Date
26,535	Great Britain	1911