July 13, 1954 H. E. MORSE 2,683,431

PROCESS OF FORMING PEN NIBS

Filed Aug. 2, 1950 2 Sheets-Sheet 1

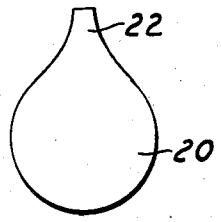


FIG. 1

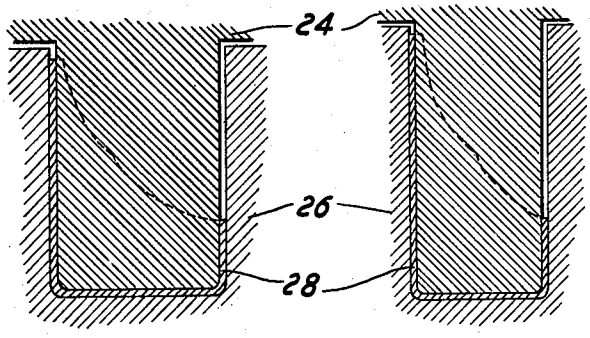


FIG. 2

FIG. 3

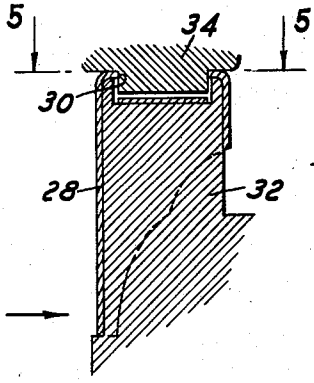


FIG. 4

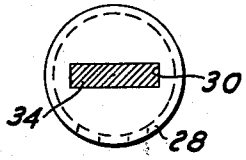


FIG. 5

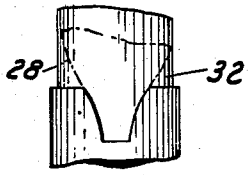


FIG. 6

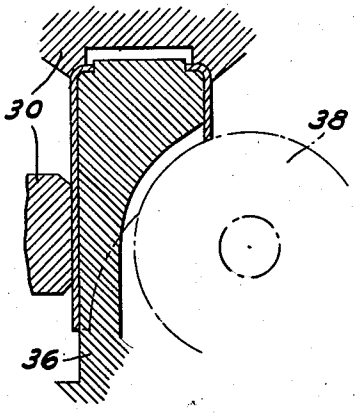


FIG. 7

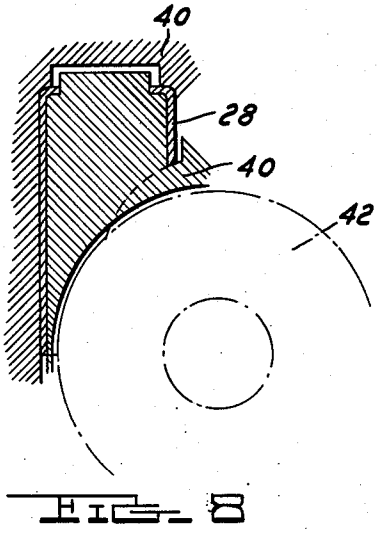


FIG. 8

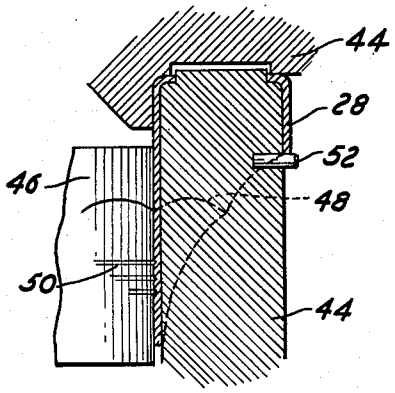


FIG. 9

INVENTOR.
HENRY E. MORSE
BY
Burton & Parker
ATTORNEYS

July 13, 1954 H. E. MORSE 2,683,431

PROCESS OF FORMING PEN NIBS

Filed Aug. 2, 1950 2 Sheets-Sheet 2

FIG. 10

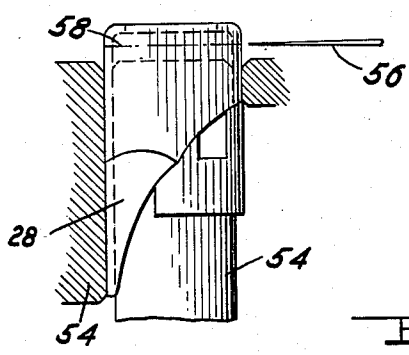


FIG. 11

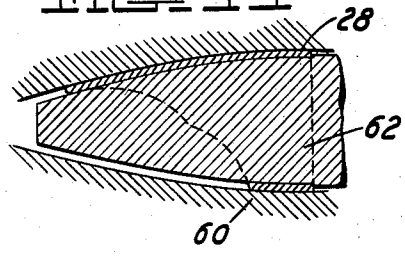


FIG. 12

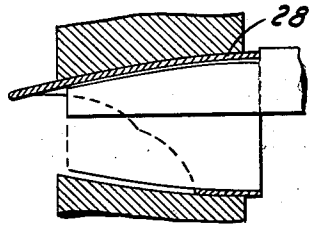


FIG. 13

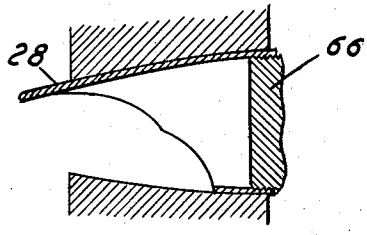


FIG. 14

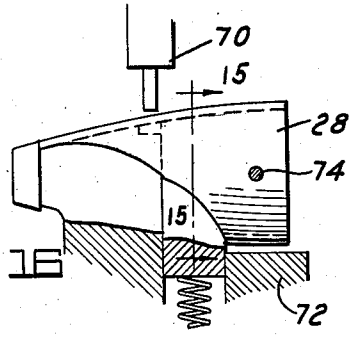


FIG. 15

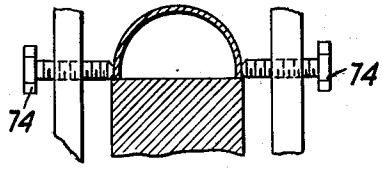
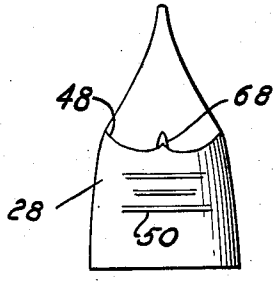


FIG. 16



INVENTOR.
HENRY E. MORSE
BY
Burton & Parker
ATTORNEYS

Patented July 13, 1954

2,683,431

UNITED STATES PATENT OFFICE

2,683,431

PROCESS OF FORMING PEN NIBS

Henry E. Morse, Dearborn, Mich.

Application August 2, 1950, Serial No. 177,227

5 Claims. (Cl. 113—32)

1

This invention relates to an improved process of forming a pen nib and to the improved nib resulting from such process.

An object is to provide an improved method for the formation of an integral, unitary, seamless pen nib which possesses to a marked degree the physical characteristics desired in a pen nib.

Another object is to provide an improved pen nib formed from and as an integral piece and wherein the threaded neck portion of the nib constitutes a seamless tubular neck portion. The nib exhibits an integral structural form which serves peculiarly well to carry out all the purposes of a pen nib.

Another object is to provide an improved method whereby a pen nib is formed from a unitary sheet metal blank by first drawing the blank into a unitary, seamless cup shape, holding the cup shaped blank while performing various finishing and shaping operations thereon, removing the bottom portion of the cup and contouring, threading and otherwise finishing the tubular bottomless cup to form a complete nib.

In the fabrication of the nib there is first formed a unitary pear-shaped blank. This blank is drawn to a seamless, tubular cup shape which determines the general shape and size of the completed nib. Preferably this drawing is performed in two operations to obtain the diameter and axial dimension of cup desired. The cup exhibits a high point on one side, produced by the neck portion of the pear shaped blank, and a low point on the side diametrically opposite the high point and the edges of the cup slope as arcs from the high point to the low point. The finishing and contouring operations are performed upon this seamless, unitary element and such contouring once established is thereafter permanently retained in the completed nib. The cup shaped element is held in position in part through engagement with the slot in the bottom of the cup and the arcuate edge portions are finished to the desired shape. The bottom portion of the cup is then removed and the finishing operations are completed upon the bottomless, seamless tubular element which is held in position in part through engagement with the finished arcuate edge portions which extend from the high side to the low side.

Various other objects, advantages and important features of the invention will more fully appear from the following claims, specification and in the drawings. In the drawings the several steps which illustrate the formation of the completed nib from the metal blank are shown. This showing is largely diagrammatic because the tools and fixtures are illustrated in diagrammatic fragments only:

2

Figure 1 is a plan of a pear shaped blank which is the beginning of the process for forming the nib,

Fig. 2 illustrates the first draw of the blank shown in Fig. 1 and wherein a cup shaped blank is produced,

Fig. 3 illustrates the second draw of the blank and wherein the cup shaped blank is elongated and reduced in diameter,

Fig. 4 illustrates the step of forming the locating slot or keyway in the bottom of the cup shaped blank of Fig. 3,

Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 4,

Fig. 6 is a fragmentary elevation of the point of the nib blank and its positioning support shown in Fig. 4.

Fig. 7 is a vertical sectional view illustrating means for holding and positioning the nib and the shaping of those edges adjacent the low side of the cup shaped blank.

Fig. 8 is a vertical sectional view of a character similar to that shown in Fig. 7 but showing the grinding wheel acting upon those edges of the cup shaped blank adjacent to the high side of the cup or the point of the nib,

Fig. 9 is a vertical sectional view generally similar to that of Figs. 7 and 8 but showing the nib supported in position for the roller of the imprinting wheel to pass thereover to imprint the same with a name and an arcuate line,

Fig. 10 shows the blank supported in position for the cutting off of the bottom portion thereof,

Fig. 11 illustrates diagrammatically the contouring of the cup shaped blank from a cylindrical tubular form to the tapered form it will possess when completed,

Fig. 12 is a sectional view illustrating the finishing of the interior of the nib,

Fig. 13 is a sectional view illustrating diagrammatically the threading of the inner end of the nib,

Fig. 14 is a view illustrating diagrammatically the supporting of the nib for the punching of the heart-shaped opening therein illustrated in Fig. 16,

Fig. 15 is a vertical sectional view taken on the line 15—15 of Fig. 14,

Fig. 16 is an elevation of the completed pen nib.

The pen nib of this application is formed from

a metal blank which may be a gold alloy or other suitable metal such as is used in the fabrication of pen nibs for the better quality fountain pens. This blank is cut to present what might be termed a pear shape indicated by the numeral 20. The neck of this pear shape is indicated by numeral 22. This pear shaped blank is drawn between suitable male and female die members indicated diagrammatically as 24 and 26 to form the cup shaped blank 28 shown in Fig. 3. Two steps are employed in the drawing so as to bring the die to a cup shape of substantially uniform thickness and of the desired length and diameter.

This cup shaped blank 28 is then finished and shaped as hereinafter set forth to produce a pen nib of the desired shape and size. To facilitate the holding of the nib for the carrying out of the various forming and shaping operations, the bottom of the cup shaped blank is provided with a locating point. Such point is hereshown as embodied in a slot 30 extending transversely of such bottom portion.

In Fig. 4 the cup shaped blank 28 is shown as supported and positioned upon a diagrammatically illustrated fixture 32 and a punch 34 is provided to knock out the part to form the slot. The pen nib is held properly positioned during this forming operation because this slot must be accurately located.

Following the formation of the slot 30 in the bottom of the cup shaped blank such blank is held in a suitable fixture or chuck illustrated schematically as 36 in Fig. 7 and a schematically illustrated shaping wheel 38 is brought to bear against those arcuate edges of the cup adjacent to the low side thereof to properly shape and finish such edges to the desired arc.

Following this operation the blank 28 is held within a fixture 40 and a grinding wheel 42 may be employed to shape and finish the arcuate edges adjacent to the point of the blank. This step is schematically illustrated in Fig. 8.

Following the carrying out of the step shown in Fig. 8 the nib is supported and located within a fixture illustrated diagrammatically as 44 in Fig. 9 and an imprinting wheel 46 is employed to imprint an arcuate line 48 and a name or other designation 50 upon the nib. The supporting fixture 44 is shown as having a pin or the like 52 to assist in positioning the pen thereof.

In carrying out of the above described operations of shaping and finishing and imprinting the nib is properly supported and positioned in part at least by virtue of the locating slot 30 formed in the bottom thereof.

Following the steps above described, the nib is held by a fixture or chuck assembly 54 illustrated diagrammatically in Fig. 10 and a cutter 56 cuts along the line 58 removing the bottom portion of the nib providing a nib of a seamless tubular form but of a generally cylindrical shape as shown in Fig. 10. Such a nib possesses a substantially uniform thickness throughout and is accurately dimensioned and fashioned.

The nib is now shaped within a contouring tool assembly which may include a fixture assembly 60 and a tool assembly 62 to the shape generally shown in Fig. 11 and where the nib 28 is illustrated as having been tapered to the form shown.

Fig. 12 illustrates schematically the boring out or shaping of the interior of the nib 28 so that it tapers in thickness as illustrated in such Fig. 12.

Fig. 13 illustrates the nib 28 of Fig. 12 as being supported and interiorly threaded as at 66.

In Fig. 14 the nib 28 is shown as supported so that the heart-shaped opening 68 may be

punched therein. This is diagrammatically illustrated. A punch member is indicated as 70. A punch or fixture assembly is indicated as 72. Holding portions of such fixture assemblies are indicated as 74.

It is understood that throughout the figures of the drawing the illustrations of the tools and fixtures is purely schematic because the claims of the invention relate to the process of carrying out of the steps set forth on the resulting nib regardless of the details of construction of the fixtures and tools whereby the operations are performed. The result is the production of a pen nib which is an integral, uniform, seamless, tubular structure.

Such nib is formed from a metal blank that initially possesses a pear like shape as shown in Fig. 1. Such pear shaped blank is drawn into a cup like form wherein the neck 22 of the pear shape constitutes the high point on one side of the cup. The bottom of the cup is provided with the locating slot 30. By means of suitable fixtures or work holder devices the cup is held and positioned in part through the slot so that the arcuate edges which extend from the high point to the low side of the cup are finished to the desired shape. The cup is then given the desired contour and interior finished shape, threading and imprinting to provide the completed nib structure.

What I claim is:

1. That process of making a pen nib comprising forming a pear shaped metal blank, drawing such blank into a seamless, integral cup with the neck part of the pear shaped blank constituting a high point upon one side wall of the cup, providing a locating point on the bottom of the cup, holding the cup and positioning the same in part by means engaged with said locating point and while the same is so held contouring those edges of the blank which extend between the high and low points upon opposite sides of the cup, removing the bottom from the cup and finishing the blank to form the nib.

2. That process of making a pen nib having a tubular end portion opposite the point end comprising the following steps forming a pear shaped metal blank, drawing such blank into a cup shape so that the neck part of the pear shaped blank constitutes a high point upon one side of the cup wall, forming a locating slot transversely within the bottom of the cup, holding the cup shaped blank in position and with positioning means engaged within said slot and correspondingly contouring those edges of the cup shaped blank extending away from the high point while the cup is so held in position to form the point end of the pen nib, cutting off the bottom portion of the cup shaped blank by cutting transversely through the side wall of the cup spaced from the bottom thereof forming a unitary, seamless, tubular end portion opposite the point end of the pen nib shape, contouring said pen nib and threading the same interiorly at its tubular end and finishing the blank to form a pen nib.

3. That process of making a pen nib comprising forming a pear-shaped metal blank, drawing such blank into a cup-shape with the neck part of the pear-shaped blank constituting a high point upon one side of the cup wall, further drawing said cup-shaped blank to reduce its diameter and increase its axial dimension, forming a locating slot extending diametrically across the bottom of the cup-shaped blank, holding the cup-shaped blank in position with positioning

means engaged within said slot and correspondingly contouring those edges of the cup-shaped blank which extend away from the high point of the side wall thereof, cutting off the bottom portion of the cup-shaped blank by cutting through the side wall of the cup spaced from the bottom thereof forming a unitary seamless tubular end portion at the end of the pen nib opposite to the point end, contouring said tubular blank by tapering the same radially thereof toward the point and increasing the thickness thereof toward the point, threading that end of the tubular nib element opposite to the point end thereof and finishing the nib element to form a tubular pen nib.

4. That process of making a pen nib which includes drawing a metal blank into a seamless integral cup exhibiting a high point upon one side wall and substantially diametrically therefrom a low point on the opposite side wall of the cup-shaped blank, providing an engageable locating point on the bottom of the cup-shaped blank, holding the cup-shaped blank and positioning the same in part by means engaged with said locating point and while the same is so held contouring those edges of the side wall of the blank which extend between the high and low points thereof, removing the bottom from the cup-shaped blank, shaping the tubular portion of the blank adjacent to the end from which

the bottom was removed and finishing the blank to form a nib.

5. That process of making a pen nib comprising shaping and drawing a metal blank into a seamless integral cup, providing a positioning opening in the bottom of the cup-shaped blank, holding the blank and positioning the same in part by means engaged within said opening, contouring the edges of opposite portions of the side wall of the cup-shaped blank from a high point on one portion of the side wall to a low point substantially diametrically opposite from the high point, removing the bottom from the cup-shaped blank and finishing the blank to form a nib.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,406,438	Block	Feb. 14, 1922
1,564,944	Colby	Dec. 8, 1925
1,608,180	Nathanson et al.	Nov. 23, 1926
1,834,758	Appleton	Dec. 1, 1931
1,887,186	Pearce	Nov. 8, 1932
1,888,956	Long	Nov. 22, 1932
1,894,632	Pearce	Jan. 17, 1933
2,267,147	Baker	July 16, 1940
2,320,369	Longmaid	June 1, 1943