

(No Model.)

J. T. FOSTER.
MANUFACTURE OF PENS.

No. 410,272.

Patented Sept. 3, 1889.

FIG. 1.



FIG. 2.

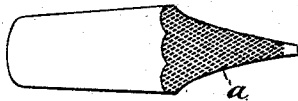


FIG. 3.

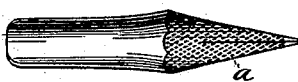


FIG. 4.



FIG. 9.

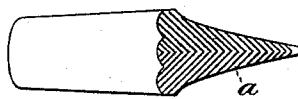


FIG. 10.



FIG. 11.



FIG. 12.



FIG. 5.

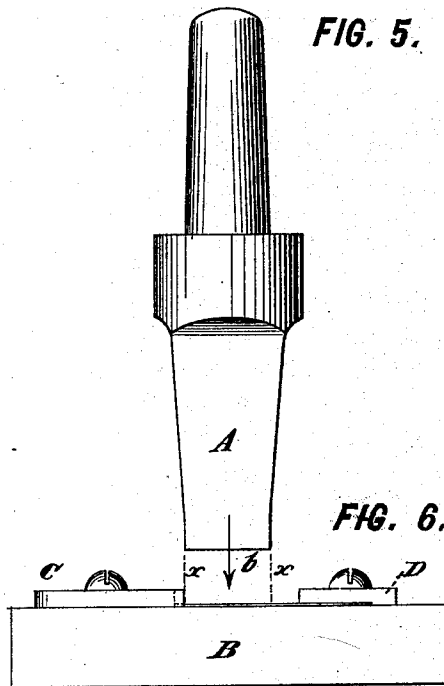


FIG. 6.

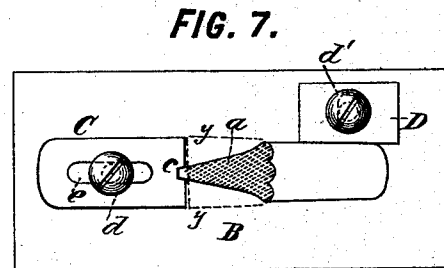


FIG. 7.

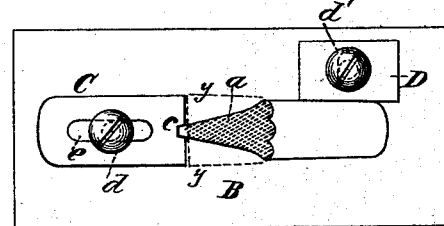


FIG. 8.



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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF PENS.

SPECIFICATION forming part of Letters Patent No. 410,272, dated September 3, 1889.

Application filed March 7, 1889. Serial No. 302,312. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. FOSTER, a citizen of the United States, residing at Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Pens and their Manufacture, of which the following is a specification.

This invention provides an improved construction of pens, chiefly applicable to gold pens, and involves also an improved method of manufacture thereof.

According to the ordinary process of making gold pens as practiced prior to this invention the following operations are performed: First, the strip of metal from which the pens are to be made is rolled to the proper thickness; second, flat pen-blanks are stamped or punched out of this strip; third, these blanks are then pointed with iridium; fourth, the separate blanks are then rolled down to the proper thickness; fifth, the portion of the blank destined to form the nibs of the pen is hammered in order to harden it and impart sufficient elasticity to the nibs of the pen, usually twenty or thirty, or sometimes as many as forty, blows with a light hammer being given; sixth, the hammering process having spread the nib of the pen laterally, it is next necessary to "cut out" the blank to the exact outline required for the pen, which is done by punching; seventh, the pen is then "raised," to give it the curved or convex shape, by striking it between dies; eighth, the operations of slitting the nib and grinding the point are then performed; ninth, the pen is polished, and, tenth, finally, the operation of "nibbing" or "stoning" is performed, which is done by rubbing the nibs on the under side against a peculiar kind of stone, by which the under surface of the nibs is dulled or scratched in order to enable it to hold the ink.

According to my improved process, the manufacture involves the following steps: The operations of, first, rolling the strip; second, stamping out the blanks; third, pointing with iridium, and, fourth, rolling the blanks to proper thickness are or may be the same as by the old process. The fifth step of my process is the same as the sixth

step of the old process—namely, the cutting out or punching to the exact outline. The sixth step of my process consists in striking the nib portion of the blank by a punch, a single blow being ordinarily sufficient, the punch being formed with a roughened or engraved face to impart a rough or indented or matted surface to the pen. This punching operation compresses and hardens the metal, thereby imparting to it the requisite elasticity without in the least spreading it in lateral direction, so that the subsequent cutting out to exact outline is not necessary. The seventh step of "raising" the pen, the eighth step of slitting and grinding the point, and the ninth step of polishing are all the same as in the old process. By my process, however, the former tenth step of "nibbing" or "stoning" the pen is omitted, since the pen is already roughened on the under side of its nib by means of the indentations formed by striking it with the punch in the sixth operation.

The product of my new process is a pen having novel and valuable characteristics. Its nibs are compressed to a hardness greater than can be obtained by hammering and have more elasticity than the nibs of pens made by the old process, so that the actual nib of the pen has greater play in writing. This increased elasticity is of especial advantage in the case of long-nibbed pens, for it causes the pen-nib to spring back into position quickly, thus giving it a more facile quality, so that faster writing can be done with it than with an ordinary gold pen whose nib has less elasticity. The surface of the nib is roughened, not merely by superficial scratches, as in the stoning process, which in course of time are worn off by rubbing of the pen against a sponge or pen-wiper to clean it, but by indentations deeply and forcibly pressed into the metal, whereby a better capillary surface is afforded for holding the ink.

By my process the hammering of the pen-nib, which requires to be done by a skillful workman, is done away with, being substituted by the simple and expeditious operation of striking a single blow (or at most two or three blows for very large pens) with a punch, which can be done by an unskilled workman. In the old process the hammering spreads the

metal laterally beyond the correct size of the pen, and the portion of this metal which is subsequently cut away weakens the pen-nib and reduces its resilience. By my process, however, all the metal in the blank is retained in the pen-nib, thus adding greatly to its strength and elasticity. By the old process of hammering, the metal, although toughened, is really not compressed, or is but very slightly compressed, the effect of the hammering being to spread the metal rather than to compact it. My operation of striking with a punch actually compresses the metal, rendering it much more dense without spreading it in the least.

15 Pens made by the old process vary greatly in elasticity, so that in buying a pen it is necessary to test a great number of pens before finding one of the precise degree of elasticity desired. By my process, however, the pens can be made of uniform elasticity, or can be made of different grades of elasticity, all the pens of each grade being precisely alike in their writing quality.

In the accompanying drawings, Figure 1 is a plan of the pen-blank after having been cut out according to the fifth step of my process. Fig. 2 is a similar view of the blank after having been struck with the punch according to the sixth step of my process. Fig. 3 is an under side view of the completed pen made according to my process. Fig. 4 is a cross-section through the roughened or indented portion or nib of the pen or blank. Fig. 5 is an elevation of the punch, and Fig. 6 is a corresponding view of the die on which the blank is held during the punching operation. Fig. 7 is a plan view of the die with the blank in place thereon. Fig. 8 is a view of the roughened end of the punch, the position of the blank relatively thereto being shown by dotted lines. The remaining views show modifications of the pen or blank. Fig. 9 is a view answering to Fig. 2, and showing the blank indented with parallel lines instead of with dots or diamond-shaped indentations, such as are shown in Fig. 2. Fig. 10 is a view of a blank indented with irregular dots, such as might be produced by sprinkling sand upon it and then striking it with a punch having a smooth face, whereby the particles of sand would be partially forced into the blank, or the end of the punch might be roughened with projections irregularly arranged and corresponding to the stippling or indenting shown. Fig. 11 is a view of a finished pen having the roughened or indented surface upon the exterior instead of upon the inner side of its nib. Fig. 12 is a cross-section answering to Fig. 4, and showing the nib portion of the pen or blank roughened on both sides by indenting it on one side and raising projections on the other which may correspond to the indentations, as shown, or may be arranged without relation to the indentations. To produce either result, both the punch and the die will be roughened.

In Figs. 2, 3, 7, 9, 10, and 11 the letter *a*

designates the roughened or indented surface of the nib portion of the pen or blank. This is shown on the inner side of the pen in Fig. 3 and on the outer side in Fig. 11. The cross-section, Fig. 4, shows the preferred character of the indentations, which, however, may be greatly varied in form.

The punch A (shown in Fig. 5) is designed to be fixed in the moving head or slide of a power-press, which may be a press of that character wherein the head or slide is driven by means of a crank or eccentric on a shaft hung firmly in bearings above it. Numerous makes of power-presses of this character are well known; or the punch A may be fixed in the moving head of a power-hammer, such as a drop-hammer.

The die or bed-plate B (shown in Figs. 6 and 7) consists simply of a flat plate designed to be fastened to the table or bolster of a power-press or hammer in correct position beneath the punch A, as indicated by the dotted lines *x x*, connecting Figs. 5 and 6, and the dotted lines *y* in Fig. 7. These latter indicate the position of the outline of the end of the punch, which itself is shown in the inverted plan, Fig. 8, its roughened surface being designated by the letter *b*. The blank is laid on the plate B, its point entering a notch *c* in a guide-piece C, which is fastened by a screw *d*, and which may be adjusted by means of a slot *e*. Another guide-piece or stop D is provided, against which one side of the blank may come, and this stop is also adjustable in direction, however, laterally of the blank by means of a slot engaged by its fastening-screw *d'*. The position of the blank relatively to the roughened end of the punch is indicated by the dotted line *x* in Fig. 8.

The advantage of my improved process might be in part availed of by employing a punch with a smooth end, as thereby the hammering of the blank by hand would be rendered unnecessary, the spreading of the metal would be in great part avoided, and the pens would possess greater uniformity of elasticity. Such a modification, however, would be inferior to the employment of my complete invention both in the perfection of the process and the product.

I have described my invention as applied to the manufacture of gold pens; but it is equally applicable to the manufacture of pens from alloys in imitation of gold, and is in part applicable to steel pens.

I claim as my invention the following-defined novel features of process and its product, substantially as hereinbefore specified, namely:

1. The improvement in the art of making pens which consists in striking the nib portion of the blank with a punch in order to compact it and impart elasticity, whereby the operation of hammering the nibs is avoided.

2. The improvement in the art of making pens which consists in cutting out the blank to the proper outline and subsequently strik-

ing the nib portion thereof with a punch in order to compact it and impart elasticity, whereby the metal is rendered more dense without being spread laterally.

5 3. The improvement in the art of making pens which consists in roughening the nib portion of the blank by striking it with a punch having a roughened surface.

10 4. The improved process of making gold and other analogous pens which consists in, first, rolling the strip; second, stamping out the blanks; third, pointing the blanks with iridium; fourth, rolling them down to the proper thickness; fifth, cutting them out to
15 exact outline; sixth, striking the nib portion of the blank with a punch in order to compact the metal and impart elasticity; seventh, raising to curved shape; eighth, slitting and grinding, and, ninth, polishing.

20 5. The improvement in the art of making

pens which consists in roughening the nib portion of the blank by striking it with a punch having its surface formed with projections, whereby corresponding indentations are formed in the blank, thereby compressing
25 the metal, imparting elasticity to the pen, and avoiding the necessity of the process of nibbing or stoning.

6. A metallic pen the surface of the nibs of which is roughened by indentations at intervals, the metal at such indentations being displaced and of greater density than elsewhere.

In witness whereof I have hereunto signed my name in the presence of two subscribing
35 witnesses.

JOHN T. FOSTER.

Witnesses:

ARTHUR C. FRASER,
JNO. E. GAVIN.