

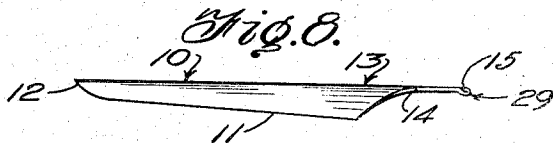
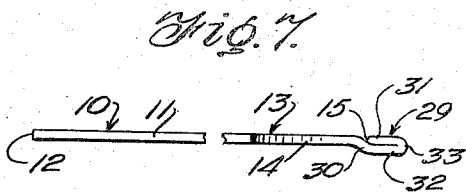
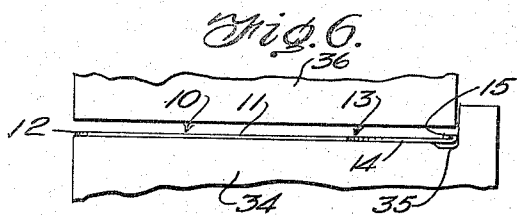
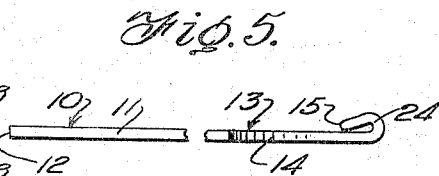
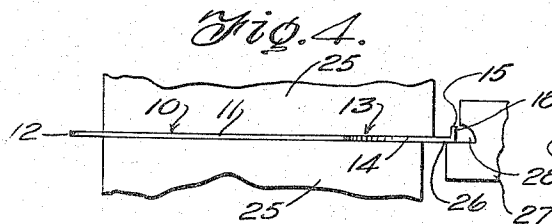
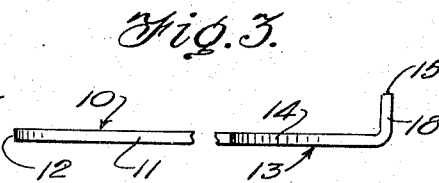
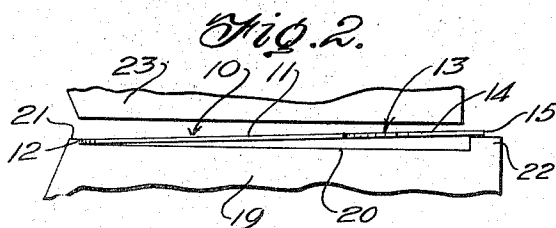
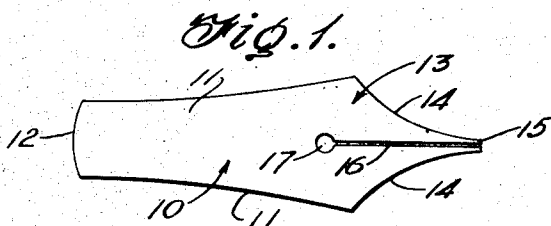
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PEN POINT AND METHOD OF MAKING THE SAME

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PEN POINT AND METHOD OF MAKING THE SAME

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5 Claims. (Cl. 113—32)

The present invention relates to pens and the process of manufacturing the same.

In the manufacture of pens for the usual writing purposes, it is highly desirable that the point of the pen be so shaped as to present a smoothly rounded surface for contact with the surface traversed by the pen in writing. Various attempts have been made to accomplish this object and notable among these attempts has been the manufacture of a pen having the pointed extremity of a blank turned back or rearwardly bent to lie flat on the adjacent part of the blank which remains in an undistorted condition. While it is true that pens manufactured in this manner do present a somewhat rounded writing point, yet as now constructed, such pens are open to several objections. Whether the rearwardly bent tip portion lies on the upper or lower side of the pen there exists, in such pens, a pair of sharply angled surfaces formed by the free end of the rearwardly bent portion and the surface against which it is bent. Ink tends to collect at this place and any attempt to clean such a pen by wiping it in the ordinary manner causes the cloth or other material to be caught by the rearwardly bent point with the result that the delicate point may be damaged and that there is certain to be a collection of fibrous substance by the rebent point from the cleaning medium. In any event, such construction leads to the rapid deterioration of the pen as a writing implement. Thus the formation of a pen in this manner, while very simply effected, produces certain objectionable results.

It is one principal object of the present invention to provide an improved pen construction wherein the pointed end of the blank is rearwardly bent on the adjacent portion thereof, but which is so arranged and constructed as to eliminate sharp corner pockets tending to form lodgments for ink, fibres and other deleterious substances.

A second important object is to provide an improved process for making such a pen wherein a certain step is provided which eliminates the sharp corner pocket above referred to, and which leaves the pen point in a smoothly rounded condition so that neither ink nor lint can be collected thereby and which renders the pen easily cleaned by wiping.

With the above and other objects in view, the invention consists in general of certain novel details of pen construction and the improved process for producing the same, all as hereinafter specifically described, illustrated in the accom-

panying drawing and pointed out in the appended claims.

In the accompanying drawing, like characters of reference indicate like parts in the several views, and:

Figure 1 is a plan view of a pen blank of a shape suitable for subjection to the present process and which, when so subjected, will produce the novel pen as presently described.

Figure 2 is a side elevation of such a blank positioned in dies for the first forming operation.

Figure 3 is a fragmentary enlarged side elevation showing the blank after the first forming operation.

Figure 4 is a side elevation of the blank shown in Figure 3 positioned in dies for the second forming operation.

Figure 5 is a fragmentary enlarged side elevation showing the blank subsequent to the second forming operation.

Figure 6 is a side elevation of the blank shown in Figure 5, positioned in dies for the third forming operation.

Figure 7 is a fragmentary enlarged side elevation showing the blank subsequent to the third operation.

Figure 8 is a side elevation of the completed pen.

As shown in Figure 1, the blank from which this novel pen is made consists of a flat strip of thin stainless steel or other suitable metal. This strip has a body portion 10, the edges 11 of which extend divergently from the rear or butt end 12. The forward end of the strip constitutes the nib portion 13 and the side edges 14 of this portion converge forwardly from the forward ends of the edges 11 to a sub-acute tip 15. A slit 16 extends rearwardly from the tip 15 along the longitudinal center line of the blank. This slit extends a short distance into the body 10 and is terminated rearwardly by an aperture 17.

In the first step of forming the pen from the blank just described a predetermined length of the forward extremity of the nib portion 13 is bent upwards substantially at right angles to the remainder of the blank as shown at 18 in Figure 3. This may be accomplished in various ways and one manner of effecting this bending is shown in Figure 2 wherein there is illustrated a bottom die 19 having a flat surface 20 of slightly less length than the pen blank. At one end there is provided a stop rib 21 and at the opposite end there is provided a forming nib 22. The blank is positioned on this die with its butt resting against the rib 21 and its point resting on the rib 22 as

clearly shown. An upper die 23 is provided which fits between the ribs 21 and 22 in such manner that movement of the upper die downwardly forces the body of the blank to lie flat on the surface 20 while the point is turned up as at 18.

In the second forming step, the blank has the upstanding portion bent backwardly to overlie the upper face of the forward end of the nib portion of the blank, this operation producing the rearwardly bent loop 24. As before, this step may be accomplished in various ways and, as an example of the means for forming the loop, the partly formed blank may be gripped between two clamping jaws 25 with the forward part of the nib portion projecting from between the jaws as at 26. A die 27 having a forming recess 28 is then moved to engage the upturned portion 18 and turn this portion down as in Figure 5.

In the formation of the point of this stage, there is provided a somewhat rounded point, but any attempt to wipe such a point will cause the wiping material to catch on the end 15 of the re-bent portion. The third step now to be described removes this tendency. In this third step, the rearwardly bent portion is flattened on the portion which it overlies and the doubled tip thus formed is offset downwardly until the top surface of the rearwardly bent portion is flush with the top surface of the body of the blank to form the flat ball point 29 as shown in Figure 7. It will be seen that the doubled portion 29 of the tip is connected to the remainder of the blank by a reversely curved stretch 30. This ball point thus is formed of an upper terminal stretch 31, a lower terminal stretch 32 connected forwardly to the stretch 31 by a substantially semi-circular stretch 33 and the lower stretch 32 merges into the forward end of the stretch 30, the stretch 31 being positioned in the plane of the blank body. This brings the face of the tip 15 below the upper face of the pen and thus the tip is guarded against wiping contact by the upper and forward face of the reversely curved stretch 30. In order to accomplish this offsetting of the ball portion and to effect final formation of the ball a suitable die arrangement, such as is shown in Figure 6, may be used. As there shown, a lower die 34 is provided with a tip forming pocket 35 offset downwardly below the general surface of the die a distance equal to the thickness of the stock from which the blank is cut. The blank is placed on this die with the partly formed tip or ball 24 located above the pocket 35. A die 36 having a flat lower face is then brought down on the partly formed blank whereupon the portion 24 is forced downwardly until the rearwardly bent portion of the tip is flattened on the adjacent portion of the blank and the upper surfaces of the body of the blank and the ball are brought into the same plane.

As a final step, the blank with its formed ball point is subject to the usual rounding and forming operation to make the completed pen as shown in Figure 8.

The pen thus formed has a ball so formed that the sharp terminal portion is guarded from contact with wiping material so that no lint will accumulate on this terminal portion. Also the pressing of the tip as in the third dieing step causes such intimate contact of the re-bent portion with the adjacent metal that no cracks are formed to accumulate ink and cause corrosion.

While the method herein set forth is particularly applicable to the production of pen points from stainless steel, it may also be used to pro-

duce pen points from alloy steels, and in fact any other metals or alloys commonly used in the making of pen points, as for example, brass, low carbon steel, gold and gold alloys.

The herein described method is an efficient and economical one producing a durable pen point having smoother writing qualities than any of the stainless steel pen points now in use.

In accordance with the present invention, there has been produced a pen having a body and writing point consisting of a tip portion rearwardly bent upwardly and backwardly onto the upper surface of the adjacent pen portion, said writing point being offset downwardly from the remainder of the pen, the extent of the offsetting being such as to cause the upper face of the bent portion to lie in the plane of the body of the pen. Preferably, the writing point is offset downwardly from the remainder of the pen an extent equal to the thickness of the stock from which the pen is made.

Stated differently, the pen is provided with a body and a writing point, said writing point comprising an upper stretch, a lower stretch united forwardly to the upper stretch by a semi-circular stretch. The pen has also a reversely curved stretch having its forward end merging in the rear of the forward stretch, and having its rear end merging in the body of the pen. The upper stretch lies, preferably, in the plane of the body of the pen and is in close contact throughout with the lower stretch, the rear end of the upper stretch being guarded by the upper and forward face of the reversely curved stretch.

From the standpoint of the method or process, the invention is directed in one of its forms to the forming of a ball point on a pen blank comprising bending rearwardly the forward tip portion of a blank capable of bending without breaking to engage the upper surface of the adjacent portion of the blank, and displacing downwardly the re-bent portion and the portion engaged thereby. The re-bent portion is flattened into intimate contact with said upper surface of the blank.

It may be noted from the above description that the initial bending operations and formation of the doubled-over point takes place after the blank has been slit. This procedure does away with certain of the difficulties which may be encountered if it is attempted to form the slit 15 after the bending operations have been performed.

We claim:

1. A pen having a body and a writing point consisting of a tip portion bent upwardly and backwardly onto the upper surface of the adjacent pen portion, said writing point being offset downwardly from the remainder of the pen with the extent of offsetting such as to cause the upper face of the bent portion to lie in the plane of the body of the pen.

2. A pen having a body and a writing point consisting of a tip portion bent upwardly and backwardly onto the upper surface of the adjacent pen portion, said writing point being offset downwardly from the remainder of the pen an extent equal to the thickness of the stock from which the pen is made.

3. The process of forming a ball point on a pen blank consisting in bending rearwardly the forward tip portion of a blank to engage the upper surface of the adjacent portion of the blank and displacing downwardly the bent portion and the portion engaged thereby, and simultaneously

flattening the bent portion into intimate contact with said adjacent portion.

4. The process of forming a ball point on a pen blank comprising slitting the blank, bending rearwardly the forward tip portion of the blank to engage the adjacent portion, flattening the bent portion into intimate contact with said adjacent portion and displacing the bent portion and the portion engaged thereby relative to the remainder of the blank.

5. A pen having a body and a writing point

consisting of a tip portion bent upwardly and backwardly onto the upper surface of the adjacent pen portion and in intimate contact therewith, said writing point being offset downwardly from the remainder of the pen with the extent of offsetting such as to cause the upper face of the bent portion to lie substantially in the plane of the body of the pen.

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