Aug. 2, 1932. H. E. WALDRON 1,869,950

PEN

Filed Aug. 10, 1931

Fig. 1.

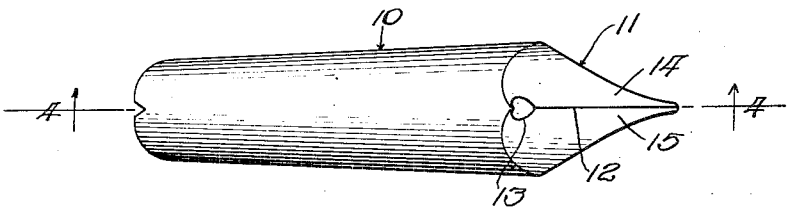


Fig. 2.

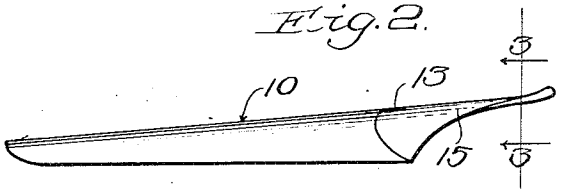


Fig. 3.

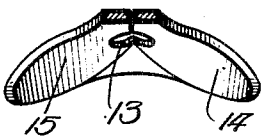
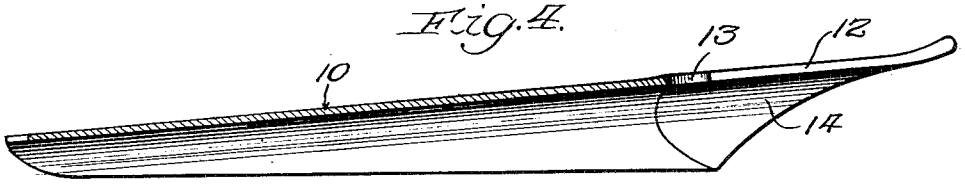


Fig. 4.



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UNITED STATES PATENT OFFICE

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PEN

Application filed August 10, 1931. Serial No. 556,133.

This invention relates to a pen and has special reference to a pen having a metallic plating over the surface thereof at the writing point end to provide a smooth surface effecting a uniform flow and spread of a writing fluid.

More particularly, this invention relates to a pen formed preferably of gold and having a plating or coating of platinum, chromium, nickel, silver, or other metals or alloys which do not readily form an oxide at normal temperatures, on the outer surface thereof preferably between the tip (at the writing point end of the pen) and the heart pierce thereof. The pen prior to its being plated is formed in the usual manner as by being died-out, shaped, slitted, tipped with iridium, ground and finally polished. The resultant pen, usually of from 10 to 14 karat gold, is next prepared for plating by being subjected to various cleaners and buffers to mechanically clean and finish the surface of the pen. The cleaned and buffed pen is then placed in a holder designed to "stop-off" any portion of the nib that is not to be plated, leaving the balance of the pen to be plated with the metallic substance of a plating bath in any desired shape or design for decorative purposes, which latter is controlled by the outline of the holder. The plating bath into which the holder and contained pen is placed is of any standard solution and an electro deposit of metal is produced on the exposed portion of the pen in the usual methods of electroplating.

Applicant has concerned himself particularly with the plating of the usual 14 karat gold pen with platinum, although other base and plating materials may be effectively employed. However, for the purposes of teaching this invention, the same will be described in the light of the association of these above mentioned metals for the reason that actual experiments have been conducted therewith and a commercial construction has been developed which has at this early date been favorably received by the trade.

The usual gold pen is alloyed with copper and silver to give the pen body the strength necessary for the usual mechanical operation thereof. Such an alloy of 10 or 14 karat gold is most successfully used on the market today for the reason that pure gold is too weak to withstand ordinary usage. It is well known that pure platinum is more resistant to corrosive action than the usual gold pen because of the copper and silver alloyed with the latter, the copper and silver alloy being slightly affected by certain reactions which would not affect pure gold or pure platinum. By reason of the provision of an electrodeposited platinum coating at the writing point end of the fountain pen between the heart pierce and the writing point where the flow of ink takes place, even the smallest chemical action is prevented from taking place thereby giving a maximum uniform flow and spread of the writing fluid to the paper.

An actual experiment has been performed with identical nibs which have been thoroughly cleaned to remove any dirt and oily film. Both pens have been dipped, one after the other, into the same writing fluid at exactly the same depth and angle and withdrawn in exactly the same manner from the fluid. A line has been made on a sheet of paper with both of the pens and it has been found without deviation that the pen having the platinum plating thereon will make a decidedly longer line than the pen not having the platinum plating. It has thus been proven that the platinum plating on the gold pen greatly improves the flow and spread of the writing fluid employed. For want of a better term the platinum plated pen will hereinafter be said to be substantially "unwettable" with the usual writing fluid, in the sense that there is substantially no chemical action taking place on the platinum plating whereby the pen is cleaned and lubricated and the flow and spread of ink from the pen on the writing surface is facilitated; whereas contrary to this, the usual gold pen may be said to be "wettable" because that pen may be slightly affected by certain chemical reactions thereby, in a comparative relation, presenting an unclean surface which will affect the flow of writing fluid.

By reason of the fact that the plated pen

is said to be unwettable with a writing fluid, at no time will there be any substantial amount of ink permitted to dry upon the pen to deposit sediment thereon, which latter would materially affect the flow of ink. Where a chemical reaction takes place and the pen is wettable with ink, a disuse of the pen for any length of time would permit the ink thereon to dry and deposit a certain amount of sediment which, after continued disuse and without cleaning, would provide a dirty surface incapable of producing a uniform flow of ink.

In the making of the usual gold pen, as hereinabove stated, the blank is died-out, shaped, and thereafter provided with a slit from the tip of the pen to the heart pierce, which latter is located adjacent the tiny passageways of the ink feeding mechanism to permit air to replace the ink drawn from the ink sack. The slit is provided in the pen for the purpose of flexibility and when pressure is placed on the nibs on each side of the slit they spread open to facilitate the flow of ink to the writing point. Ordinarily, there is no provision by which the material on each side of the slit after being made in the pen can be ground or polished excepting perhaps at the very tip. Therefore, in the normal production of pens, the portions of the pen bounding the slit may be said to be left in a roughened condition which is detrimental to the flow of ink in writing. In the plating process, pointed out above, the material of the pen between the nibs is actually plated by reason of the so-called "throwing power" of the electrolyte and is thereby provided with a smooth surface over which the ink will flow uniformly and freely. This plating takes place in the finishing operation without requiring any spreading of the nibs, which latter, if performed, would materially affect the character of the pen. In the language of the trade, the resultant effect of plating is a lubricated slit along which the writing fluid is assured a most even flow.

Although this invention has been outlined above with reference to the particular article now being commercially exploited, it will be understood that plating a pen by electrolysis may not be the only desirable method of providing a non-wettable pen and that the latter may be encased or enclosed by a shell having the necessary characteristics.

In the practice of plating pen nibs, it is assured that all pens are uniform, or, in other words, the uniformity of the manufacture of pens may be readily controlled. In the commercial exploitation of pens it can be assured that in the display of a number of pens each one is identical with the other. Also, the plating will be permanent since there will be substantially no chemical reaction of the ink thereon.

One of the objects of this invention is to provide a pen having a plating over the ink flowing surface thereof to provide a non-wettable surface upon which ink will not dry to leave sediment and thereby to affect the smooth flow of the writing fluid.

Another object of this invention is to provide a pen of the character above described in which the slit between the nibs of the pen is "polished" by plating for purposes of lubrication thereby facilitating the flow of ink to the paper.

A further object of this invention is to provide a pen in which the uniformity thereof can be readily controlled.

A still further object of this invention is to provide a pen having the usual body and strength plated with a metal which is non-wettable or non-corrosive in character and therefore not affected by reactions of the writing fluid.

Also, it is the object of this invention to produce a platinum plated pen which will provide a more uniform flow and spread of the ink from the pen to the writing surface.

Other objects and advantages will hereinafter be more particularly pointed out and for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawing, in which latter:

Figure 1 is a plan elevational view of a pen embodying the features of this invention;

Fig. 2 is a side elevational view of Figure 1;

Fig. 3 is an end sectional view taken on the line 3—3 of Fig. 2; and

Fig. 4 is a central longitudinal sectional view of the pen taken on the line 4—4 of Figure 1.

Referring now more particularly to the drawing, the device of this invention comprises a body portion 10 formed with a pointed tip 11, which latter is cut longitudinally in the usual manner by a slit 12 from the heart pierce 13 to the extreme writing point end. The slit 12 divides the writing point end of the pen into the nibs 14 and 15.

In the usual formation of pens, the same are made for the most part of from 10 to 14 karat gold blanks which are died-out and thereafter formed substantially semi-circular in lateral cross section and slit from the heart pierce to the extreme writing point end, the slit being preferably formed by means of a rotary saw blade. In the subsequent course of grinding and polishing to which the pen is submitted the material of the pen nibs on opposite sides of the slit 12 is ordinarily left in what might be said to be their roughened state. In the better quality pens the extreme writing point end of the pen is provided with an iridium tip which is fused thereon to cover the upper

and lower surfaces of the nibs 14 and 15 at the extreme outer end thereof. The iridium tip, if provided, or the extreme outer end of the pen, is ground to provide a smooth writing point and the pen is thereafter highly polished to provide a finish of desirable quality to facilitate the flow of ink from the pen.

In the present invention, the above construction, which is the usual type of commercial product of high grade, is next prepared for plating in the usual manner of electroplaters by subjecting the pen to any of the usual cleaners and buffers to obtain a clean plating surface. After this cleaning and buffing operation, the pen is preferably placed in a holder which is designed in such a way as to "stop-off" any portion of the nib that is not to be plated leaving the balance of the nib exposed within the plating solution to receive the platinum or other metallic coating of the bath in which it is placed. Any desired design may be had as controlled by the contour of the holder into which the body portion of the pen is placed. There are, of course, a number of methods by which the plating could be controlled on the pen and a satisfactory "stop-off" could be made by dipping the pen in some solution not affected by plating methods such as lacquer, gum, beeswax, and the like. Any standard method of plating may be employed and the plating could be turned out in any of a number of different finishes.

In plating the pen, as shown more particularly in Fig. 3, the plate will extend between the nibs of the pen, the solution passing through the slit 12 and depositing platinum on the material of the nibs on either side thereof by rotating the holder and contained pen and receiving the throwing power of the electrolyte. The plating over a highly finished surface has been found to provide a uniform flow and spread of the writing fluid and the plating, extending between the nibs of the pen, in effect, lubricates the passage of ink to insure a free flow thereof when the nibs separate under pressure in writing.

As a result of this invention, a pen is provided having a smooth surface substantially unwettable with the usual writing fluids over the portion thereof on which the fluid flows from the ink feeding mechanism to the writing surface. By reason of the substantially unwettable condition of the writing fluid contacting surface, the fluid is, in effect, lubricated to flow evenly and uniformly.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A pen comprising a body portion having a pointed writing end, said body portion having a metal plating over a substantial portion at said pointed writing end of a character to provide a smooth surface for effecting a free and uniform flow and spread of a writing fluid on a writing surface.

2. A pen comprising a body portion of gold alloy having a pointed writing end, said body portion having a metal plating over a substantial portion at said pointed writing end of a character to provide a smooth surface for effecting a free and uniform flow and spread of a writing fluid on a writing surface.

3. A pen comprising a body portion having a pointed writing end, said body portion having an aperture therethrough between the ends thereof and a slit from said pointed writing end to said aperture, said body portion being plated at said pointed writing end substantially to said aperture to provide a smooth surface for effecting a free and uniform flow and spread of a writing fluid on a writing surface.

4. A pen comprising a body portion having a pointed writing end, said body portion having a plating of platinum over a substantial portion at said pointed writing end of a character to provide a smooth surface for effecting a free and uniform flow and spread of a writing fluid on a writing surface.

5. A pen comprising a body portion of gold alloy having a pointed writing end, said body portion having a plating of platinum over a substantial portion at said pointed writing end of a character to provide a smooth surface for effecting a free and uniform flow and spread of a writing fluid on a writing surface.

In witness whereof, I have hereunto subscribed my name.

HARRY E. WALDRON.