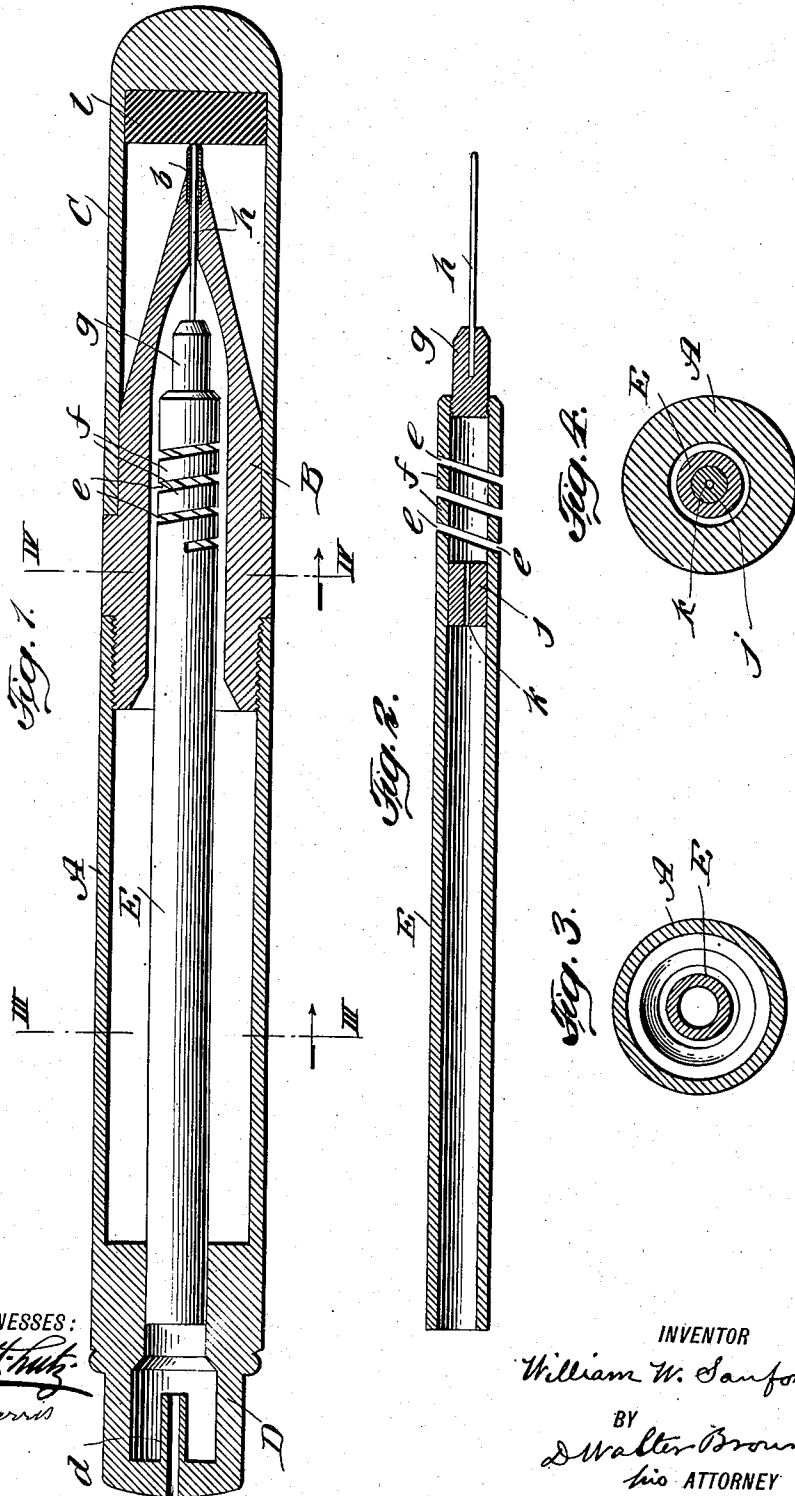


W. W. SANFORD.  
 RESERVOIR PEN.  
 APPLICATION FILED MAR. 26, 1909.

941,466.

Patented Nov. 30, 1909.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

WILLIAM W. SANFORD, OF NEWARK, NEW JERSEY, ASSIGNOR TO SANFORD & BENNETT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## RESERVOIR-PEN.

941,466.

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Application filed March 26, 1909. Serial No. 485,945.

To all whom it may concern:

Be it known that I, WILLIAM W. SANFORD, a citizen of the United States of America, and a resident of the city of Newark, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Reservoir-Pens, of which the following is a specification.

This invention relates to improvements in reservoir pens, particularly stylographic pens, and the purpose of the invention is especially to provide reservoir pens in which the air tube is so formed as to constitute of itself a spring to insure proper adjustment of the needle and smooth clear writing, while dispensing with the costly platinum springs sometimes used. My invention also, besides greatly reducing the cost, overcomes the serious disadvantage which attends the use of platinum springs, of the needle's getting out of alinement and catching and being bent and injured while re-assembling the parts after filling the reservoir; for with my invention the needle is held true and passes through the point without catching.

Referring to the drawings which accompany the specification to aid the description, Figure 1 is a longitudinal section and elevation, on a large scale, of a stylographic pen equipped with the invention. Fig. 2 is a longitudinal section of the air tube on the scale of Fig. 1. Figs. 3 and 4 are cross sections respectively on the planes of the lines III—III and IV—IV of Fig. 1.

The barrel, or reservoir, A and point section B may be constructed in the usual manner, and the end D of said barrel, which may be integral with the body of the barrel as shown, is preferably chambered as shown and provided with the inwardly projecting air inlet tube *d*, whereby leakage of ink, should the pen be carried with the end D down, is obviated. Said cap C may be provided with a rubber plug *e*, bearing on the point *b* when said cap is on the point section.

The air tube E is formed as a spring at the part near to the needle *h*; and this is preferably effected by cutting fine spiral slits through that part of said tube E, so as to form a spiral thread or threads as *f*. By such construction, the hard rubber, or other suitable material of which said tube E is made, constitutes an elastic end portion, so that of itself, and without any other spring, it gives to the needle *h* a very smooth motion

over the paper when writing, and insures a smooth clear impression without blotting; and said spring also enables the said needle *h* and the tube or point *b*, at the extremity of the point section B, to be properly adjusted to each other without difficulty, said needle *h* normally projecting slightly beyond the rounded end of said point *b*. Said needle *h* is secured in a plug of hard rubber, *g*, to about half the length of the plug, which plug is threaded or otherwise fastened in the end of the air tube E preferably outside of the spring part thereof.

To properly check the air feed to the ink and prevent too rapid flow and leakage of the ink, I prefer to insert in the air tube E, above the slits *e*, a plug *j* having a minute bore *k* as shown, whereby the air is properly fed to the lower end of the said tube E, and to the barrel A; and I find by actual use with a number of pens, that there are great advantages in choking said air tube E as near as practicable to the slits *e* between the spirals *f*. As indicated in the drawing, this choking is effected by said plug *j* with its minute bore, which is placed as near as practicable to the said slits *e*. When the air tube E is thus choked, the result in preventing leakage of ink through said air tube E when the pen is carried with the end D down, is much better than if the plug *j* were placed, or said air tube E were in any other manner choked, at a part remote from said slits, and it will be understood, that if the threads *f* were not employed, but the air tube were solid and provided with the usual air hole, then the choke should preferably be near said air hole, and I therefore wish to cover as an important part of my invention an air tube choked adjacent to the orifice by which air is admitted to the reservoir or barrel.

In operation, the cap C being removed from the point section B, needle *h* moves over the paper, the spring formed by said spiral *f* insures to the needle a smooth motion with clear smooth writing, and the slight longitudinal movement of said needle promotes uniform continuous feed of the ink through the bore in the end of point section B past the needle *h* and to the point *b*. The end of said air tube E remote from the needle *h* fitting with practically air tight fit in the end of the barrel A, experience with a number of pens shows that sufficient ink

to cause any trouble can not work through the bore of plug *j*, and the very little ink that can work through is retained in the chamber of plug D.

5 Now having described my improvements, I claim as my invention.

The combination in a reservoir pen, of an air tube provided with a spiral integral thread constituting a spring, a needle supported by said tube, and a plug with minute

bore in said tube adjacent to the opening between the coils of said spiral, substantially as described.

Signed at New York city this 25th day of March 1909.

WILLIAM W. SANFORD.

Witnesses:

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