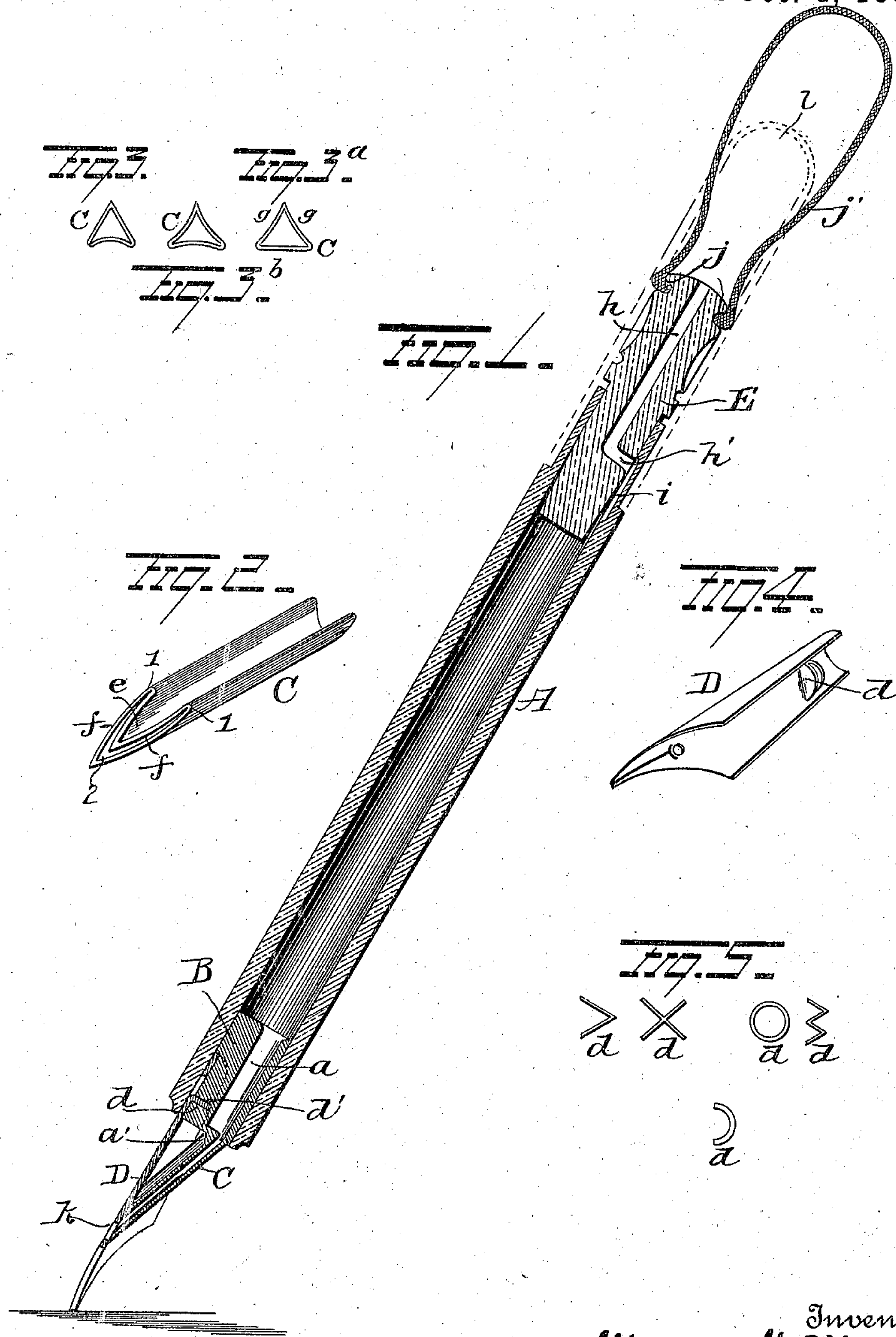


(No Model.)

W. H. O'KEEFE.
FOUNTAIN PEN.

No. 547,355.

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FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 547,355, dated October 1, 1895.

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To all whom it may concern:

Be it known that I, WILLIAM H. O'KEEFE, a resident of Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Fountain-Pens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in fountain-pens, one object of the invention being to construct the device in such manner that the pen and feed-bar will bear a fixed relation one to the other so as to prevent displacement of the pen or bar and thus insure the proper working of the pen at all times.

A further object is to produce simple and efficient means for securing the pen-point in place and yet permit its ready removal when desired.

A further object is to construct an angular feed-bar in such manner that the greatest possible depth will be given to acute angles and so insure the most perfect capillary attraction, and as a result a flow of ink always to the pen-point.

A further object is to so construct a feed-bar for a fountain-pen that the proper flow of ink in one direction and the simultaneous passage of air through the bar in the opposite direction will be insured.

A further object is to provide the pen with valve and suction device for filling the barrel with ink.

A further object is to produce a fountain-pen which shall be simple in construction, comprising a small number of parts, and which shall effectually perform its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an enlarged view of a fountain-pen, partly in section, showing my improvements. Fig. 2 is detail view of the feed-bar. Figs. 3, 3^a, and 3^b illustrate modifications of the feed-bar. Fig. 4 is a separate view of a pen-point, showing the projection for retaining the same in a

fixed position relatively to the feed-bar. Fig. 5 illustrates different forms of said projection.

A represents the barrel or holder of the pen, which constitutes the ink-reservoir and the body portion of the pen. The lower end of the barrel or holder A is adapted to receive a slip-section B, which latter is made with a chamber or passage *a* extending longitudinally there-through. The chamber or passage *a* communicates at one end with the interior of the barrel or ink-reservoir and at the other end with a hollow feed-bar C, secured to said slip-section and preferably braced by a web or bracket *a'*. The butt of the pen-point D is disposed between the slip-section B and the interior wall of the barrel A and is retained in a fixed or locked relation to the feed-bar by means of a projection *d*, which projects from the pen-point at any suitable place in the bowl or butt portion thereof and enters a slot *d'* made in the solid portion of the slip-section, said projection *d* being preferably stamped from the bowl or butt of the pen. By thus attaching the pen-point to the barrel or holder it will be retained firmly in its place relatively to the feed-bar and ink will be prevented from contact with the butt of the pen-point. While the pen-point will be held in a rigid position, yet it can be removed by withdrawing the slip-section B, and when thus removed the free or outlet end of the feed-bar will be exposed to view and can be readily cleaned, if necessary. It is not essential that the projection *d* and the slot *d'* be made straight across the butt of the pen-point or that the said projection be located at any particular part of said butt. Said projection and slot may be made of any desired shape, some of the shapes in which it could be made being shown in Fig. 5. The only possible exit for ink from the barrel A is through the chamber *a* of the slip-section B and the feed-bar C. The latter is so constructed that the ink will flow to the extreme end thereof and be fed to the pen-point a suitable distance in rear of the nibs thereof, and this flow of ink will be caused by capillary attraction. The partial vacuum caused in the barrel by the displacement of ink fed to the pen-point will be prevented by the admission of air, which passes up through the feed-bar at each side of the flow of the ink there-

through and simultaneously with said flow. To accomplish these results in the most efficient manner, the feed-bar C is made hollow and so as to produce a re-entrant portion, as at *e*. The feed-bar, which is thus made angular in cross-section, (preferably triangular,) is beveled at its free end, so as to lie parallel or nearly parallel with the under face of the pen-point, and when thus beveled the opening or outlet will have two elongated portions *ff* of some length meeting at the point of the pen and producing very acute angles 1 1 2. The ink will flow to the sharp central angle or point 2 and escape therefrom to the pen-point, while the air will find its way into the bar at and approximately to the lateral acute angles 1 1 and pass upwardly through the bar at the sides and simultaneously with the downward flow of ink in the central portion of the bar. The steady and constant flow of ink in proper quantity will thus be insured and will always be fed to the pen-point at the same place, as said pen-point bears a fixed relation to the feed-bar and its accidental movement relatively thereto is rendered impossible by the construction and arrangement of parts above described.

In the preferred form of construction of the feed-bar the same is made so that the portion *e* will be a re-entrant angle; but said portion may be made in the form of a re-entrant curve, as shown in Figs. 3 and 3^a, or the sides *g g* may be made in the form of re-entrant curves, as shown in Fig. 3^b. In any case the acute angles above referred to will be formed so as to insure the constant and regular egress of ink and the simultaneous ingress of air. A plug-valve E is adapted to be inserted into the upper end of the barrel A. This plug has a hole *h* formed in its outer end, and this hole terminates at its inner end in one side of the tapering end of the plug, as at *h'*. Inside of the barrel a recess *i* is made, with which the end *h'* of the hole in the plug-valve is adapted to register when the reservoir is being charged or emptied, should occasion require emptying it. After filling the reservoir the valve is simply turned axially, and in this way it is closed and the ink is held in. The plug is preferably constructed at the upper or outer end with an annular groove *j*, adapted to receive the rubber suction *j'*.

To fill the pen the valve is turned to make the hole *h* and recess *i* register. The rubber suction is applied to the valve and squeezed until the air is all out, and then the lower ends of the pen and feed-bar are submerged

to a point below the hole *h* in the pen. Then the air is permitted to enter by removing pressure from the rubber suction, thus making room for the ink which follows it. A cap *l* may be placed on either end in the usual manner.

When the pen and feed-bar are removed from fountain-pens as heretofore constructed, it is a puzzling matter to determine just how they were adjusted and return them again to their proper position. In fact, there is no absolute guide to insure this.

With my improved construction there is no possibility even of mistake, as their relative position is a fixed one, so that they cannot be returned wrong.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fountain pen, the combination with a pen holder, and a removable pen section, of an angular feed tube extending on an incline from the pen section to the pen, and a pen held between the holder and pen section and in contact with the outer end of the feed tube, one of said parts, the pen, holder or pen section having a projection and another a hole adapted to receive the projection, said parts arranged to maintain a fixed relation between the outer end of the feed tube and the pen, substantially as set forth.

2. In a fountain pen, a hollow, angular feed bar having a re-entrant portion, substantially as set forth.

3. In a fountain pen, a hollow, angular feed bar having a re-entrant portion and a beveled free end adapted to produce sharp angles at the outlet of the bar and insure the simultaneous egress of ink and ingress of air, substantially as set forth.

4. In a fountain pen, the combination with a barrel in which the ink reservoir is formed, said barrel having a recess in its inner wall at or near the upper end thereof, of a plug valve having an opening through it, said opening terminating in one side of the valve and adapted to register with the recess in the wall of the barrel, and means for drawing the ink into the reservoir, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM H. O'KEEFE.

Witnesses:

E. A. BARNES,
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