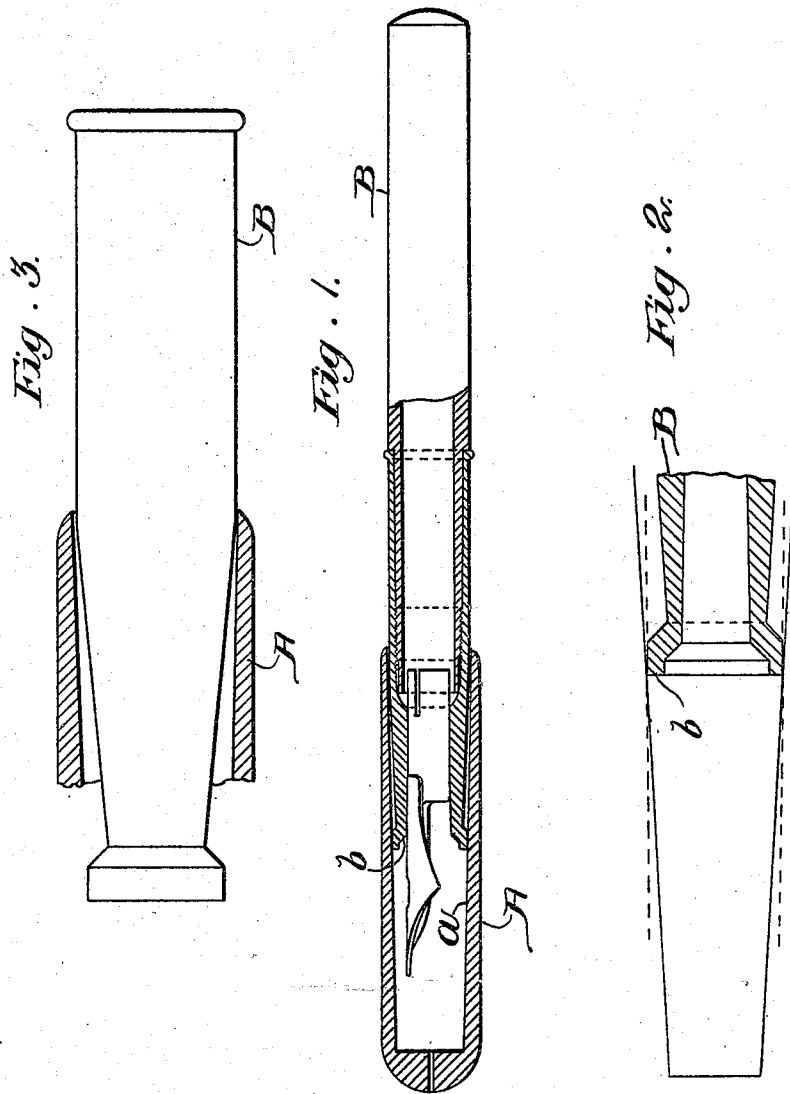


H. J. UPTON.
FOUNTAIN PEN.
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939,456.

Patented Nov. 9, 1909.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY J. UPTON, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO DAVIDSON RUBBER COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

FOUNTAIN-PEN.

939,456.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed February 21, 1908. Serial No. 416,963.

To all whom it may concern:

Be it known that I, HENRY J. UPTON, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

My invention is an improved fountain pen, designed to give a firm union betwixt the cap and the open end of the fountain or handle, when the cap is in place, covering and protecting the pen, and at the same time to make an ink tight joint at the very mouth of the fountain or handle so that, in case by accident, such as dropping the pen or carrying it point down for a long period, ink should escape from the fountain into the cap, it would be prevented from reaching the outer surface of the handle where the fingers grip in writing.

In the drawings:—Figure 1 is a sectional view of my cap in position upon the end of the fountain, to illustrate the engaging surface; and Fig. 2 is a detail on an enlarged scale, showing the flange with a disparate taper. Fig. 3 is a detail on an enlarged scale illustrating the effect of lateral force applied to the fountain pen when the cap is assembled upon the fountain.

Heretofore the caps of fountain pens have been secured to the fountain or handle when in use either by a fitted cylindrical joint engagement as in United States Letters Patent to Waterman, No. 559,422, dated May 5, 1896, or by a conical joint engagement as in United States Letters Patent to Hamilton, No. 145,102, dated Dec. 2, 1873, or to Waterman, No. 604,690, dated May 24, 1898.

The cylindrical joint engagement is firm, but owing to its extent it has a tendency to suck the ink from the fountain, if the cap is suddenly removed, and as such a joint must be fitted, it is practically impossible to have the caps in a given size of pen, interchangeable. The conical joint as heretofore used, while it is self fitting and the caps therefore interchangeable, and while it may be unmade without any sucking effect because it breaks engagement under a slight lateral stress or movement, is troublesome when this occurs in the pocket by reason of some unnoted lateral pressure exerted perhaps in leaning against a desk or the like.

It is an object of my invention to provide a conical joint engagement between cap and

fountain which will be of minimum extent and easily broken by intention, but firm and permanent against accidental displacement. To this end the inner surface, *a*, of the cap A is either made tapering throughout or has a tapered inner surface about at that point (about midway of its length) which is opposite to the extreme open end or mouth of the fountain or handle B when the two parts are assembled together. The extreme end of the fountain B is provided with an annular flange or ring *b*, preferably slightly beveled at its outer edge to a conicity slightly less than that of the opposed surface of the cap, (see Fig. 2) so that the extreme outer end and edge of the flange or ring *b*, first makes contact with the inner surface of the cap and exerts a wedging action until a union and liquid tight joint is effected. The mouth of the cap is of such diameter as to loosely fit the end of the fountain or handle and is so proportioned in size that under no circumstances will it make joint with that part but will loosely fit upon it. The object of this proportioning of parts, is first, to insure that the joint is effected within the cap by the flange or ring *b*; second, that the mouth of the cap shall not require to be accurate as to diameter, a considerable factor of variation being permissible; third, that in case the mouth of the cap passes up onto the cylindrical portion of the fountain or handle to insure that no cylindrical joint shall be formed.

The relation of the cap and fountain at the mouth of the cap when the two parts are in engagement to cover the pen is such that the mouth of the cap and the fountain cooperate as a stop to confine lateral displacement of the cap and the consequent breaking of the conical joint between the flange or ring *b*, and the cap.

It will be obvious that by making the joint engagement of the cap at about the middle of its length the leverage tending to break the joint engagement is much reduced. It will also be obvious that by organizing the cap and fountain in this way the mouth of the cap which loosely fits the fountain, is brought into contact with the fountain upon one side when any force is applied laterally which tends to displace the cap or swing it upon the flange or ring as a pivot and thus break the conical joint between the flange or ring and the cap and in

this way the lateral force is resisted before the joint is broken. In Fig. 3 I have illustrated this action, showing the movement and stop action in an exaggerated way. Of course the actual movement possible is that due to the play between the largest mouth of the cap of a given size and the smallest fountain of a given size and in the extreme case the loose fit of the cap upon the fountain leaves only a play of about one-sixty-fourth of an inch.

The conical joint between the flange or ring *b*, and the surface *a*, is self fitting and self renewing by wear, the leverage tending to break the conical joint is reduced to a minimum while the leverage saved (that between the mouth of the cap and the joint surface *a*,) is utilized in creating a stop action with the fountain as a cooperating member.

It will be clear that a conical joint such as I have described can be easily broken by

longitudinal force and that the trifling extent or area of the joint will prevent any suction from being created during the operation.

I claim:—

In a fountain pen, the combination of an open ended fountain having a ring about its open end with a cap having inside a conical joint surface to cooperate with the ring and having its mouth proportioned to loosely fit the fountain when the conical joint is complete and cooperate with the opposed portion of the fountain as a stop against lateral movement of the cap upon the fountain, substantially as shown and described.

In testimony whereof I hereto affix my signature, in presence of two witnesses.

HENRY J. UPTON.

Witnesses:

F. W. VAUGHN,
OLIVER MITCHELL.