H. J. UPTON.

FOUNTAIN PEN.

APPLICATION FILED APR. 1, 1918.

1,272,731.

Patented July 16, 1918.

Fig. 1.

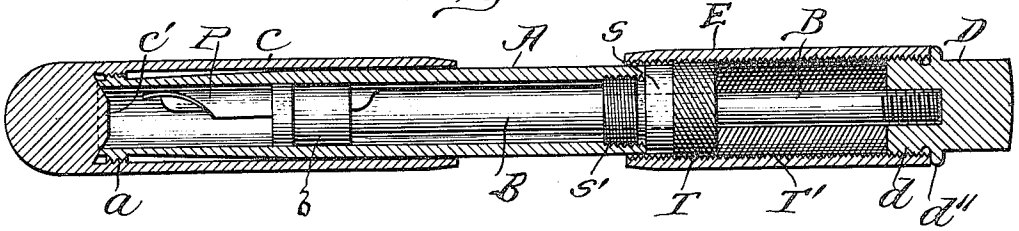
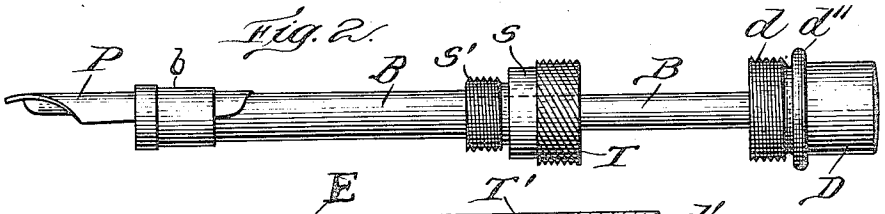


Fig. 2.



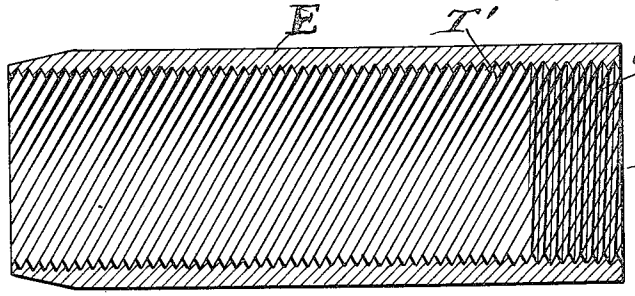


Fig. 3.

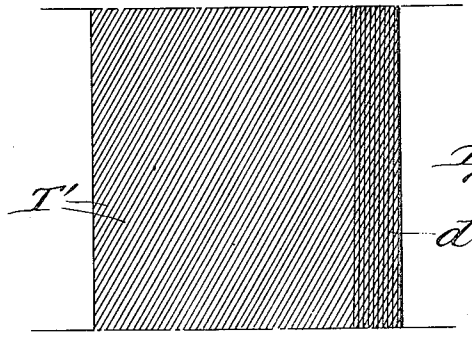


Fig. 4.

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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

1,272,731. Specification of Letters Patent. Patented July 16, 1918.

Application filed April 1, 1918. Serial No. 225,855.

To all whom it may concern:

Be it known that I, HENRY J. UPTON, citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Fountain-Pens, of which the following is a specification.

My invention is an improved fountain pen, of the type in which the point, or pen proper, is retracted within the barrel of the pen when not in use and projected for writing purposes.

In the drawings:

Figure 1 is a longitudinal section of the pen, closed;

Fig. 2 shows the pen point, plug, rod, stuffing box and button, assembly;

Fig. 3 shows the sleeve on an enlarged scale, in longitudinal section; and

Fig. 4 shows the threads on the inner surface of the sleeve developed.

In pens of the type mentioned, the pen proper, or "point" is mounted upon a plug and feed bar at the open end of the fountain, and when the pen point is projected for use the plug fills the open end of the fountain, preventing the passage of ink, except through a groove or aperture in the plug, to the feed bar beneath the pen point. This plug is connected to a rod extending longitudinally within the fountain,—and through a stuffing box at the rear end of the fountain, where it is attached to a means, preferably a sleeve sliding on the rear, outer surface of the fountain, for moving the rod and plug, back and forth, to retract or project the pen point. All this is old and well known.

An inconvenience attending this construction was that owing to slight imperfections in the fit of the parts, the frictional resistance to direct operation was sometimes considerable and nearly always non-uniform, resulting in sudden movement of the parts and the consequent accidental ejection of a portion of the ink charge. To overcome this difficulty the connecting rod was movably connected to the barrel by means within the barrel so that the movement of the rod might be controlled by the connection to prevent sudden or irregular movement of the rod.

My improvement is in means for mediately connecting the connecting rod with the barrel, by a male and female threaded engagement, outside the barrel, thus rendering available more of the ink capacity of the barrel, without diminution by the mechanical parts necessary to make a connection within the barrel, also, the outside construction renders it possible to make the mechanism large and strong, and therefore durable and free from breakage, also, the cost of making the parts is less and the assembling and repairing simpler and easier, so that dealers can make repairs without returning the pen to the manufacturer and the assembling may be done by unskilled labor.

The drawings and description disclose my improvement in its preferred form. A is the fountain, within which is the connecting rod B, with plug and feed bar, *b* and pen point P. At the opposite end from pen P the barrel is closed by a stuffing box S which is preferably a separate part, screwing into the barrel by a threaded boss, *s'*, and forming, when in place, in effect, an extension rearwardly of the barrel. Through this stuffing box, S, which is of any approved construction, the rod B passes and is fixed in a button D, having screw threads, *d*, upon its outer surface. The button also is provided with an annulus *d''*. The outer surface of the stuffing box portion of the barrel carries a multiple thread T of small angle to the axis of the barrel, the threaded surface not being of sufficient length to enable any thread to make a complete turn about the stuffing box or barrel. The sleeve E is of such interior diameter as to pass freely along the outer surface of the barrel. It carries, upon its inner surface, threads of two distinct angles, superimposed one upon or under the other, that is to say, the sleeve is given a thread *d'* to correspond with the thread *d*, and also, and upon the same surface, is threaded at T' to correspond with the threads T.

The several parts are assembled as follows: the pen point P is secured upon the plug and feed bar, *b*, in any suitable manner. The connecting rod B (which is preferably integral with plug *b*), is then passed through the stuffing box S and fixed in the button D. The pen P and rod B are then passed into the rear end of the barrel or fountain A and the stuffing box S is screwed into the fountain by the threaded boss *s'*. The sleeve E is now passed onto the barrel at the pen point end, until it reaches and engages thread T and is screwed along until sufficient open end is secured to receive the

threads *d* on the button D. The button is now screwed into the sleeve until the end of the sleeve makes a firm frictional engagement with the annulus *d''* and the button is now in firm connection with the sleeve E, which is now connected by threads with the button and also with the stuffing box extension of the barrel.

This matter of assembly is in practice of importance, as owing to its simplicity, certainty and lack of mechanical difficulty, unskilled work people are competent to perform the operation. The assembly described above is rendered possible by the combination in the sleeve of threads of two different angles upon one surface, operating to two different ends, namely, the multiple threads T, T' for purposes of propulsion and the single threads *d*, *d'* for engaging and securing the sleeve and button together.

It will now be clear that when the sleeve is rotated about its longitudinal axis, which corresponds with the longitudinal axis of the barrel, the sleeve E, button D, rod B and pen P must move longitudinally of the barrel, in consequence of the engagement of sleeve and barrel by means of the threads T, T'.

The preferred form, above described, in which the stuffing box is made separately from the barrel is much to be preferred, upon practical considerations. In manufacturing and placing the threads, if any imperfection or breakage occurs, the material loss is trifling, while when the threads are placed upon the end of a barrel made in one piece, the entire piece is spoiled. Repairing and replacement is made more easy and more cheap and the working of a short section like the stuffing box is easier than is the working of a long barrel. However, I do not intend to limit myself to the form in which the stuffing box is made as a separate piece or part.

The inside of the cap C at its closed end is provided with a conical plug *c'* to fit into the open end of the fountain, when the pen is closed, and is provided with screw threads, *a*, to engage screw threads *a*, upon the outer surface of the barrel to secure the cap and plug in place. All this is as is customary in pens of this type.

I claim:—

1. In a fountain pen of the type described, in combination, a barrel, open at both ends; a plug and pen point at one end; a stuffing box at the other end; a connecting rod passing from the plug to and through the stuffing box; an outer sleeve upon the barrel connected to the rod and connected to the barrel by multiple threads of small angle to the axis of the barrel and sleeve, to actuate the rod longitudinally of the barrel by the rotation of the sleeve upon the barrel.

2. As in claim 1, the stuffing box separately formed and forming an extension of the barrel and having threads of small angle to the axis of the barrel upon its outer surface, to co-act with corresponding threads upon the interior of the outer sleeve.

3. As in claim 2, the connecting rod being fast at its rear end to a button carrying a connecting screw thread upon its outer surface to engage with co-acting threads in the interior of the rear end of the sleeve, to connect for simultaneous movement the rod, button and sleeve.

Signed by me at Boston, Mass., this 28th day of March, 1918.

HENRY J. UPTON.