



# UNITED STATES PATENT OFFICE.

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## FOUNTAIN PEN.

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*To all whom it may concern:*

Be it known that I, CARL F. LITTE, a citizen of the United States, residing at Fort Madison, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Fountain Pens, of which the following is a specification.

My invention relates to fountain pens and has for one of its objects the provision of a fountain pen construction with feed mechanism enabling the fountain pen to be filled upon insertion of the nib into ink a distance substantially no greater than the length of the slit in the nib.

A further object is the provision of a fountain pen feeding mechanism in which the feed tube is perforated longitudinally with one end of its perforation opening into the feed section and the other end of such perforation opening against the upper end of the slit in the nib.

A still further object is the provision of a fountain pen feed tube which is easily adaptable for operative engagement with nibs of various sizes and shapes.

Other objects will appear hereinafter.

An embodiment of my invention is illustrated in the accompanying drawing, forming a part of this specification, and in which—

Fig. 1 is a longitudinal view of a fountain pen embodying my invention;

Fig. 2 is an enlarged plan view of a feed tube embodying my invention; and

Fig. 3 is a longitudinal section taken through the feed tube.

Referring more particularly to the drawing, I have indicated a fountain pen barrel 4 with a feed section 5 fitted therein and an ink sack 6 attached to the feed section 5 in the usual manner. In the feed tube 4 is mechanism for squeezing the sack 6 for expelling air when it is desired to fill the ink sack 6 or for use in sucking in and pumping out ink or other fluids to clean the pen. The ink bag squeezing mechanism shown comprises a lever 7 pivoted as at 8 in a slot 9 of the barrel 4. Inside the barrel 4 is a presser bar 10 and spring 11 cooperating with the lever 7 for squeezing the sack 6. The means for squeezing the sack 6

illustrated is substantially the same as that shown in United States Letters Patent No. 1,118,240, granted November 24, 1914, to W. A. Sheaffer. It will be understood that any other form of means for compressing the sack 6 may be used when so desired.

The feed section 5 has a longitudinal perforation 12 therein which is flaring at 13 and a feed tube 14 is disposed with one end portion extending into the perforation 12 against the flaring portion 13, the latter providing a shoulder to limit the movement of the tube 14 into the feed section 5. The form and shape of the flaring portion 13 and the adjacent portion of feed tube 14 is such that a substantially fluid and air tight joint is formed when the feed tube 14 is in proper position in the feed section 5.

Also, extending into perforation 12 is the upper end of a nib 15, the feed tube 14 serving to hold the nib 15 in position in said perforation 12. The nib 15 may be of any ordinary form having a slit 16 in its point reaching up onto the feed tube 14. The nib 15 may also have an opening at 17 at the upper end of the slit 16 but the device will work efficiently without the opening 17.

The feed tube 14 is provided with a perforation 18 which extends longitudinally of the feed tube 14 with one end 19 opening into the perforation 12 and the other end 20 opening under the upper end of the slit 16, or where there is an opening 17, in the nib 15, at such opening 17. It will be seen that it is not necessary for the body of the nib 15 above the opening 17, or above the upper end of the slit 16 should fit snugly against the feed tube 14. In the construction illustrated in the drawings the nib 15 need lie closely against the feed tube 14 only adjacent the opening 20. Since the nib 15 is slitted from its point to the opening 20 such part of the nib 15 is sufficiently yieldable to automatically conform to the outer end of the feed tube 14 at the opening 20 to provide a fluid-seal or fluid-tight joint between the nib 15 and the feed tube 14. Small irregularities in the upper surface of the feed tube 14 above the opening 20 are therefore immaterial as a tight joint between the rear portion of the nib 15 and

the entire upper length of the feed tube 14 is unnecessary. Since the amount of the nib 15 which is in contact with the feed tube 14 adjacent the opening 20 to form the liquid seal is comparatively small, such liquid seal can be effected with much greater facility than in fountain pens wherein the nib must fit the feed tube over the entire upper length along a slot in the feed tube adjacent the nib.

In the construction of fountain pen feed tubes considerable difficulty is encountered in securing a perfect fit between the pen and the feed tube along the slot in the upper portion of the latter. Feed tubes are usually made of hard rubber which spring out of shape upon changes of temperature. Furthermore, imperfections in the nib engaging surface adjacent the feed slot causes the nibs to be held out of contact with the feed tube and an efficient liquid seal is often not obtained. In the ordinary construction of fountain pens where the feed tube and the nib must come in contact with each other over substantially the entire length of the feed tube, irregularities in either the pen or the feed tube or both will cause the pen to become flooded or operate inefficiently. In the construction illustrated the cost of manufacture is reduced because not so much skill is required in making the feed tubes and in assembling them in the fountain pen. Furthermore, on account of the opening 20 being located adjacent the most flexible portion of the pen its efficiency in operation is greatly increased because a liquid seal will be always maintained while leakage or flooding of ink will be greatly minimized or entirely prevented.

While I have shown a self-filling fountain pen it should be understood that the feed tube is adaptable to other types of fountain pens. However, the feed tube illustrated is particularly adaptable to self-filling fountain pens because when it is desired to fill the pen it need be inserted in the ink no farther than to cover the opening 20. In the ordinary self-filling fountain pen, on account of the feed slot extending along the upper surface of the feed tube over the entire length thereof, the pen has to be inserted a sufficient distance to immerse part of the feed section such as that shown at 5 in Fig. 1 and the ink must therefore be wiped off, such as with a blotter, before the pen can be used otherwise the ink on the feed section would soil the fingers of the user. This objection in the use of the ordinary self-filling fountain pen is entirely avoided by means of the feed-tube constructed as illustrated in the drawings because in order to operate the self-filling fountain pen it need not be dipped into the ink to such an extent that the ink will come in contact with any parts which the user is likely to

touch when writing. In operating the self-filling fountain pen shown in Fig. 1 the lever 7 is tilted back on the pivot 8 to cause the compression of the ink sack 6 and when the lever 7 is released it automatically springs back to its socket so that the suction caused by the expansion of the sack 6 will draw in the ink through the small passage 18 and large passage 12 if the feed tube 14 is immersed in ink at this time with the opening 20 below the surface and the feed section 5 above the surface of the ink in the receptacle from which the ink is being withdrawn to fill the pen.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of my invention as defined by the claims hereto appended, and I desire therefore not to be restricted to the precise construction herein disclosed.

Having thus fully disclosed an embodiment of my invention, what I desire to secure by Letters Patent of the United States is:—

1. A fountain pen comprising a feed section having a perforation therethrough composed of end portions connected by an intermediate central flaring portion with each end portion of said perforation of substantially uniform cross-section throughout its length and its central portion flaring from one of said end portions to the other; and a feed tube having one end disposed in one of said end portions of said perforation and engaging the flaring portion of the latter forming a fluid-tight joint, there being a discharge passage in the feed tube.

2. A fountain pen comprising a feed section having a perforation therethrough composed of end portions connected by a central flaring portion, one end portion of the perforation being larger in diameter than the other and the central portion flaring from one of said end portions to the other; and a feed tube having one end disposed in the larger cylindrical end portion of said perforation and engaging said flaring portion so as to provide a substantially liquid-tight joint, there being an ink passage extending through the feed tube.

3. A fountain pen comprising a feed section having a perforation therethrough; a shoulder in said perforation intermediate the ends of the latter; a feed tube having one end disposed in said perforation and engaging said shoulder providing a substantially liquid-tight joint at said shoulder, there being an ink passage extending through the feed tube; and a nib extending into said feed section perforation and held between the wall of the latter and the feed tube.

4. A fountain pen comprising a feed section having a perforation therethrough; a shoulder in said perforation intermediate

the ends of the latter; a feed tube having one end disposed in one end portion of said perforation and engaging said shoulder so as to provide a substantially liquid-tight joint, there being an ink passage extending through the feed tube; and a nib extending into the feed section perforation and disposed against the feed tube with the nib engaging the feed tube closely around the adjacent opening of the ink passage in the latter.

5. A fountain pen comprising a feed section having a perforation therethrough; a feed tube in said perforation and extending from the latter, there being a perforation through the feed tube with its discharge opening on one side of the latter a considerable distance from the feed section; and a nib on the feed tube with a substantially tight joint between the nib and the feed tube around said discharge opening.

6. A fountain pen comprising a feed section having a perforation therethrough with one portion of the perforation of substantially uniform cross-section throughout its length and another portion tapering to provide a shoulder; a feed tube in the first-mentioned portion of said perforation with an end engaging said shoulder, said feed tube extending from said perforation and having an ink passage therethrough with a discharge opening on the side of the feed tube a considerable distance from the feed section; and a nib extending into the first-mentioned portion of the perforation of the feed section against said feed tube and held by the latter with a portion of the nib fitting closely against said feed tube around said discharge opening.

7. A fountain pen comprising a feed section having a passage therethrough with an intermediate part of said passage flaring providing a shoulder within the passage; and a feed tube having one end extending into said passage with the end of said tube engaging said shoulder forming a fluid-tight joint.

8. A fountain pen comprising a feed section having a passage therethrough; a shoulder on the feed section within said passage; a nib extending into said passage; and a feed tube extending into said passage against said shoulder forming a substantially fluid-tight joint between the shoulder and feed tube, said feed tube also frictionally holding the nib in said passage.

9. A fountain pen comprising a feed section having a passage therethrough; a shoulder on the feed section within said passage intermediate the ends of the latter; a nib extending into said passage; and a feed tube having an opening extending diagonally therethrough from its end within the feed section to a point adjacent its other end at its side adjacent the nib, the feed

tube fitting tightly around said opening against the nib.

10. A fountain pen comprising a barrel; feeding means attached to the barrel and comprising a feed section with an opening therethrough and a feed tube extending into said opening with the end of said feed tube engaging a portion of the wall of the opening in the feed section forming a substantially fluid-tight joint.

11. A fountain pen comprising a feed section having a passage therethrough and a flaring shoulder in the passage intermediate the ends of said feed section; a nib extending into said passage; and a feed tube having its side clamping the nib tightly against the wall of said passage and one end engaging said flaring shoulder forming a substantially fluid-tight joint.

12. A fountain pen comprising a feed section having a passage therethrough and a shoulder or abutment in the passage intermediate the ends of the latter; a feed tube extending into said passage with an end engaging said shoulder providing a fluid-tight joint between the feed tube and feed section, there being a rectilinear passageway through the feed tube opening on the side of the latter distant from the adjacent end of the feed section; a nib disposed against said feed tube with an end extending into said feed section and tightly held in the latter by the feed tube with a portion of the nib held tightly against the feed tube around the passageway through the latter.

13. A self-filling fountain pen comprising self-filling mechanism and a feed section having a passageway therethrough, a shoulder within said passageway intermediate the ends of said feed section, a feed tube adapted to extend into said passageway and abut against said shoulder to form a fluid-tight joint while at the same time securing a nib in said passageway in position to extend along the exposed portion of said feed tube, said feed tube having a rectilinear bore therethrough to the outer portion thereof to a position under the pen adapting the self-filling mechanism for operation by immersion in ink only partially and without immersing the said feed section.

14. A self-filling fountain pen comprising a barrel; self-filling mechanism within said barrel; a feed section attached to the barrel and having an axial passage therethrough; a shoulder within said passage intermediate the ends of said feed section; a feed tube having one end extending into said passage with an end tightly engaging said shoulder forming a liquid-tight joint, said feed tube extending from said feed section and having a rectilinear bore therein extending from the inner end of the feed tube to one side adjacent the outer end of such feed tube; and a nib frictionally held in the passage of

said feed section by the feed tube with the nib lying over the portion of the feed tube extending from said feed section with the feed tube fitting close to the nib around the adjacent opening of the bore of the feed tube, the nib and feed tube being arranged to permit drawing ink into the barrel upon immersing the lower ends of the nib and feed tube only in an ink supply. In testimony whereof I have signed my name to this specification on this 26th day of January, A. D. 1920.

CARL F. LITTS.