

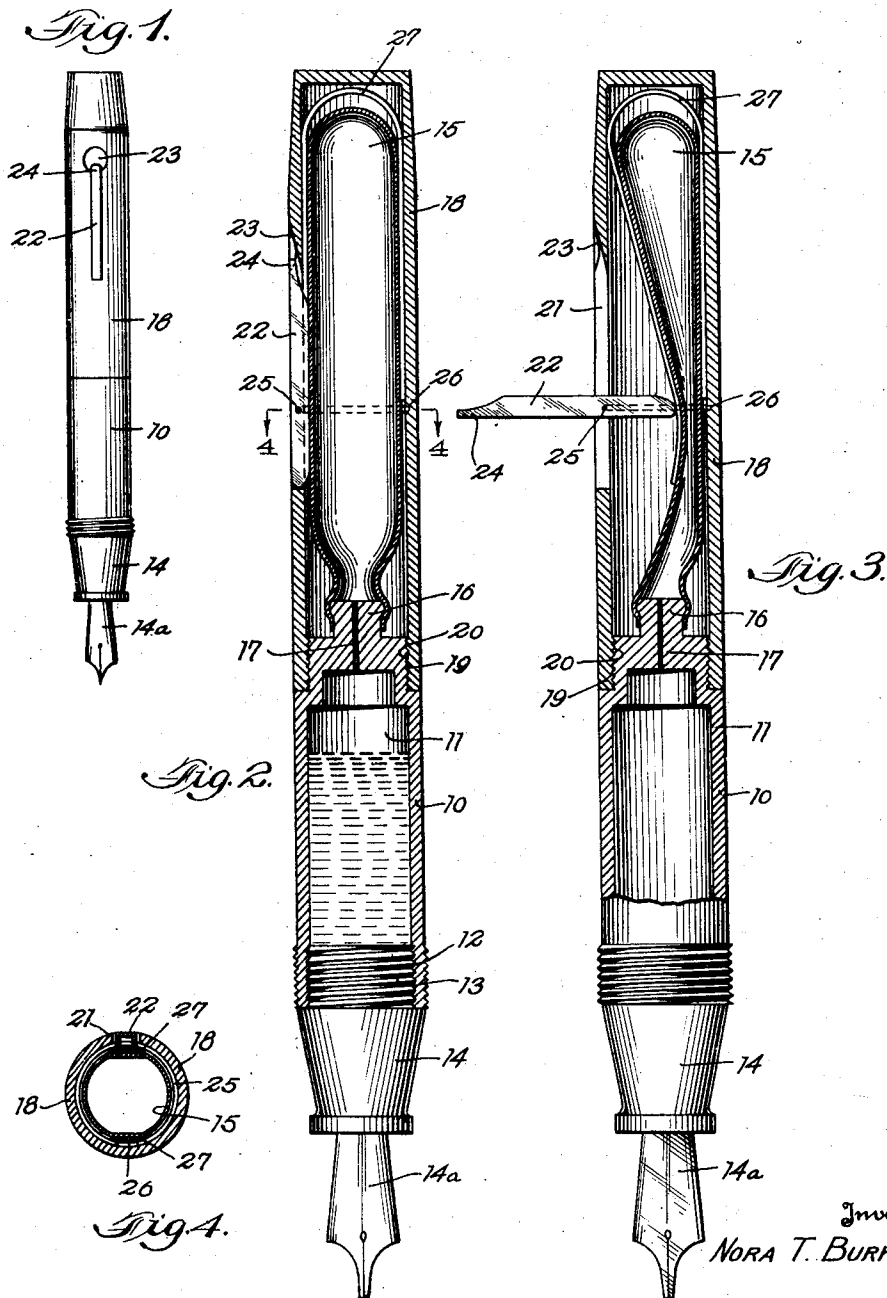
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FOUNTAIN PEN

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UNITED STATES PATENT OFFICE.

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FOUNTAIN PEN.

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This invention relates to fountain pens and has particular relation to those pens which have been called self-filling fountain pens.

5 In a large proportion of the self-filling fountain pens now in use, the main reservoir which supplies the ink for the pen point is made of soft rubber in the shape of a tube with one end connected to the tube leading
10 to the pen point. By various means, the soft rubber tube is compressed to drive out the air. Upon release with the pen point end submerged in ink, the tendency of the rubber tube to return to its normal position
15 causes the atmospheric pressure on the ink in the bottle or ink well to drive the ink up into the soft rubber reservoir. When partially full, a portion of the interior of the rubber tube reservoir is in contact with ink and a portion is in contact with air. This latter portion becomes more or less dry. This intermittent contact with inks of various compositions causes the rubber to soon
20 deteriorate and become soft requiring replacement of the reservoir. Worse than the cost of replacement of the reservoir is the damage sometimes done to clothing of the owner of the pen when the reservoir breaks.

The primary object of my invention is
30 the provision of an improved fountain pen which can be easily filled by a suction device without taking the pen shell apart and without having the ink come into contact with the suction device.

35 Other and further objects will be apparent to those skilled in the art from a reading of the complete specification.

Referring now to the drawing wherein I have illustrated a preferred embodiment of
40 my invention,

Fig. 1 is an outside longitudinal view of my invention.

45 Fig. 2 is an enlarged view similar to Fig. 1 but having the greater portion in cross section, the parts being in vertical position and after filling.

Fig. 3 is a view similar to Fig. 2 but having the parts in position before the filling operation has taken place.

50 Fig. 4 is a cross section on the line 4—4 of Fig. 3.

Similar reference characters refer to the same or similar parts throughout the several views of the drawing.

55 Referring particularly to Figs. 2 and 3,

the outer shell of the pen comprises a main body portion 10, having therein a chamber 11 forming the ink reservoir. At the end of the main body portion 10 adjacent the pen point is a threaded portion 12 which coacts
60 with a complementary threaded portion 13 of a finger piece 14. The usual pen point 14^a is suitably secured within the finger piece. A suitable opening extends through the finger piece 14 to connect the reservoir
65 with the pen point. As this construction is old and well known, further details will not be shown or described.

To draw the ink into the reservoir, I have provided, at the end opposite to the pen
70 point, a suction means which itself may not be touched during the filling operation but which may be operated without removing any portion of the pen casing.

The suction device herein illustrated, is a
75 suitable soft tube 15 as of rubber which is attached at its open end to a nipple 16 which may be integral with the main body portion 10. This nipple portion 16 has a very fine opening 17 connecting the chamber 11 with
80 the interior of the suction tube 15. Encasing the suction tube 15 to protect the same from being inadvertently pressed, and forming a part of the outer shell of the pen, is a tube member 18 closed at one end and hav-
85 ing a threaded portion 19 at its opposite end co-operating with the threaded portion 20 on the body portion 10.

In order to operate the suction device, I provide a means at the side of the tube 18
90 which may be operated without removing any portion of the casing.

At one side of the tube 18 is a slit 21 which extends through the wall of the tube and provides a space to be occupied by the lever
95 22. At one end of the slit 21 is an inclined wall 23 upon which rests the tapered end 24 of the lever 22. This lever 22 is pivoted at its center by means of a spring wire 25 open at its bottom and located in a groove
100 26 extending circumferentially about the interior of the casing 18. This spring wire tends to spring outwardly against the wall of its groove 25. This spring passes through
105 a small opening in and acts as a fulcrum for, the lever 22.

Normally holding the lever 22 in its longitudinal position shown in Fig. 3, is a U-shaped spring 27 having a normally expanding
110 action. This spring is so shaped to fit

the outside of the tube 18 to normally clear the outside of the suction tube 15 and at the same time lie in the path of the end of the lever 22 when the latter is moved on its pivot.

When it is desired to fill the pen with ink, the tapered end 24 of the lever 22 is lifted with the finger nail and swung on the pivot 25. The inwardly swinging end of the lever 22 engages one side of the flexible U-shaped member 27 and presses the same against the suction tube 15. This compresses the latter as the parts approach the positions illustrated in Fig. 2. This compression of the tube 15 expels the air through the very small opening 17 to the chamber 11 which is connected to the atmosphere.

The pen point end of the pen is now submerged in ink while the pen is held in a vertical position. The lever 22 if now released, will return to its normal position shown in Fig. 3. This return action is caused by the expansive action of the flexible U-shaped member 27. The release of the suction tube 15 permits the same to expand. The atmospheric pressure on the ink causes the same to rise in the reservoir chamber 11 as shown at 28 in Fig. 3. The capacity of the chamber 11 is greater than that volume of the suction tube 15 which is compressed by the flexible U-shaped member 27. For this reason, the amount of ink drawn in is not sufficient to fill the chamber 11. The very small size of the opening 17 prevents the ink from entering the suction tube even though the pen is laid on its side or is turned bottom up.

From the above, it will be clear that I have

provided in the same structure a fountain pen which while self-filling can be filled (1) without removing any part of the pen; (2) without having the ink come into contact with the suction device; (3) without the hand of the operator coming into contact with the suction device; and (4) while the suction device is always protected against accidental compression.

While I have described and illustrated in detail an embodiment of my invention, I desire to have it understood that I do not limit myself to the exact showing and that modifications and changes may be made without departing from the spirit of my invention and within the scope of the appended claim.

Having described my invention, what I claim is:—

A fountain pen comprising a body portion and a pen point, the body portion having a reservoir, the reservoir having a connection at each end, one connection communicating with the pen point, the other connection being a single very small opening, an air suction means connected to the very small opening and of effective capacity less than the capacity of the reservoir means for protecting the air suction means against accidental operation and means for operating the suction means and having a portion exposed at the outside of the shell of the pen.

In testimony whereof I hereunto affix my signature.

NORA THERESA BURKE.