Jan. 30, 1923. 1,443,515

A. WINTER.
FOUNTAIN PEN.
FILED MAY 16, 1921.

Fig. 1.

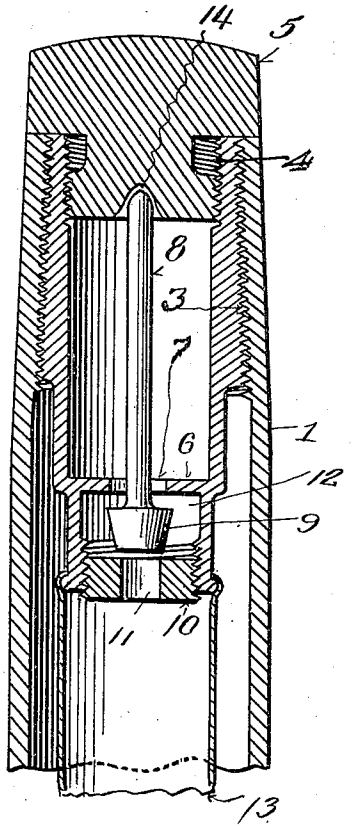


Fig. 2.

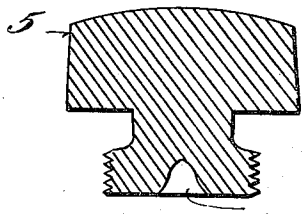


Fig. 3.

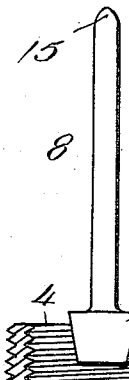


Fig. 4.

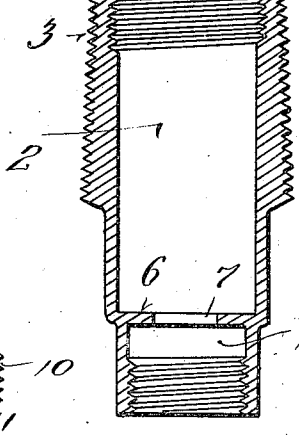
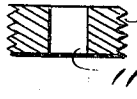


Fig. 5.



PROPRIETOR
Arthur Winter
BY his ATTORNEYS Darby & Darby

Patented Jan. 30, 1923. 1,443,515

UNITED STATES PATENT OFFICE.

ARTHUR WINTER, OF JERSEY CITY, NEW JERSEY.

FOUNTAIN PEN.

Application filed May 16, 1921. Serial No. 470,188.

To all whom it may concern:

Be it known that I, ARTHUR WINTER, a citizen of the United States, residing at Jersey City, county of Hudson, and State of New Jersey, have made a certain new and useful invention in Fountain Pens, of which the following is a specification.

This invention relates to fountain pens and is more specifically directed to an improvement on the type of fountain pen shown and described in my co-pending application Serial No. 411385, filed September 20, 1920.

The object of my invention is to provide a fountain pen which is simple in structure, efficient in operation and economical in manufacture, and wherein replenishment of writing fluid is obtained by the addition to the pen of water or the like by which replenishment a predetermined amount of concentrated ink material is fed into the pen coincidently therewith to form a charge of writing fluid in the barrel thereof.

Further objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arragement of parts, all as will be more fully hereinafter set forth as shown in the accompanying drawing and finally pointed out in the appended claims.

Referring to the drawing,—

Figure 1 is a view in section of the rear end of the fountain pen having incorporated therein my present invention.

Figs. 2, 3, 4 and 5 illustrate sectional views of the detached part of the rear end of the fountain embodying my invention and shown in Figure 1.

The same part is designated by the same reference character wherever it occurs throughout the several views.

In my co-pending application, Serial No. 363060, filed March 5, 1920, for fountain pens, I have shown and described a fountain pen structure wherein a reservoir bag adapted to contain the writing fluid is employed in connection with means for compressing the bag to cause the same by suction to draw water in one end thereof and at the same time when properly adjusted to draw concentrated ink material into the opposite end thereof.

In my co-pending application, Serial No. 411385, filed September 20, 1920, I show the same principle applied to a different construction wherein the maximum amount of concentrated ink material drawn into the bag by suction is pre-estimated and definitely fixed. In that structure, however, the ink material is fed into the same end of the bag as is the water or other fluid. To accomplish this I show and describe in the identified application a valve structure provided with a hollow stem through which the replenishing fluid supplied to the pen bag is drawn.

In accordance with my present invention, I eliminate the use of a hollow stem thereby greatly simplifying the construction and rendering the same more economical to manufacture, by securing the supply of ink material into the bag at the opposite end to which the fluid is supplied. I accomplish this by leaving the end of the barrel 1 which forms the pen body, opposite to the end which supports the pen point, open and interiorly threaded as clearly shown. I provide what I will term the ink chamber 2, which is exteriorly threaded as at 3 to be enabled to be screwed into the interior threads in the barrel 1.

While I no not desire to be limited or restricted in this respect, I so position the chamber 2 relative to the barrel 1 that the ends are flush as clearly indicated in Figure 1.

The interior of the ink chamber 2 is threaded at its outer end as illustrated at 4 to receive therein the cap 5, which closes the ink chamber, but which may be unscrewed therefrom to allow ink material to be supplied therein as and when required.

For the sake of convenience and artistic appearance, I prefer to have the cap 5 so formed as to complete the contour of the rear end of the fountain pen in the usual well known manner and as shown.

The ink chamber 2, as in the case of my application Serial No. 411385 above identified, is provided with a partition wall 6, which partition wall is provided with a central orifice 7 therethrough, and from which extends the stem 8 provided at its end with a cone shaped head 9, the inner end of which is larger in diameter than the orifice 7, so that the end surface of the partition 6 forms a limit of upward movement of the stem 8 relative to the ink chamber 2.

The inner end of the ink chamber 2, that is, as shown in Figure 4, the portion thereof which extends below the partition 6, is

interiorly threaded to receive a threaded nut 10, provided with an orifice 11 extending therethrough. The nut 10 forms an adjustable limit stop for the movement of the stem 8 in a downward direction and at the same time permits, when the valve head 9 is raised therefrom, any ink material which lies in the auxiliary chamber 12, formed between the nut and the partition 6, to be drawn into the bag 13 by suction when the bag is depressed to draw, by suction, any fluid through the pen end thereof, provided, of course, that the valve head 9 is raised from off its seat.

It will be apparent by suitably adjusting the nut 10, which may be done before bag 13 is applied, the amount of ink material allowed to enter the auxiliary chamber 12 may readily be controlled.

The cap 5 is provided with a cone shaped recess raised in the centre thereof as indicated at 14, which is adapted to frictionally engage the similarly shaped end 15 of the stem 8.

The operation of the pen as thus described is as follows:

When it is desired to fill the pen with a fluid and with writing material from the chamber 2, the cap 5 is unscrewed so as to thereby draw the stem 8 upwardly lifting the head 9 thereof from its seat on the orifice 11 of nut 10 to open orifice 11'. The bag is then depressed and released in the usual well known manner, for example as illustrated in my co-pending application last above identified, and liquid drawn thereinto by suction which suction simultaneously therewith drains the ink material which has theretofore entered the auxiliary chamber 12. As soon as the bag 13 has again become expanded the cap 5 is again screwed into tight position forcing the valve head 9 on to its seat on the nut 10. When it is desired to replenish the ink material in the chamber 2, the cap 5 is unscrewed and removed, the partition 6 preventing the stem and valve head 8 and 9 from being withdrawn, and also serving to unloosen the curved end 15 of the stem 8 from its similarly shaped seat in the cap 5.

Many modifications and changes in details will readily occur to those skilled in the art without departing from the spirit and scope of my invention as defined in the claims.

Having now set forth the objects and nature of my invention, and having shown and described a structure embodying the principle thereof, what I claim as new and useful and of my own invention and desire to acquire by Letters Patent, is:—

1. In a fountain pen of the self-filling type, a reservoir bag adapted to contain a fluid, an ink chamber, a normally closed communication passage between said bag and said chamber and means for opening said passage to allow the bag by suction to draw a pre-determined amount of concentrated ink into said bag at the end opposite thereof to which water is drawn thereinto.

2. In a fountain pen of the self-filling type, a reservoir bag adapted to contain a fluid, an ink chamber, a normally closed communication passage between said bag at one end thereof and said chamber, and means for opening said passage to allow the bag by suction to draw a predetermined amount of concentrated ink into said bag simultaneously with the filling of said bag through the opposite end thereof.

3. In a fountain pen and in combination with a barrel, a bag reservoir contained therein, of an ink chamber supported by said barrel at the end thereof opposite to the point of said pen and provided with means for attachment to said bag, an auxiliary chamber formed in said ink chamber and in communication with said ink chamber and said bag, and means for controlling said communications as and for the purpose described.

4. In a fountain pen and in combination with a barrel, a bag reservoir contained therein, an ink chamber supported by said barrel at the end thereof opposite to the point of said pen and provided with means for attachment to said bag, an auxiliary chamber formed in said ink chamber having openings in communication with said ink chamber and said bag, a valve for controlling said openings and means for controlling said valve.

5. In a fountain pen and in combination with a barrel, a bag reservoir contained therein, an ink chamber supported by said barrel at the end thereof opposite to the point of said pen and provided with means for attachment to said bag, an auxiliary chamber formed in said ink chamber and in communication with said ink chamber and said bag, and means controlled exterior to said pen for controlling said valve.

6. In a fountain pen and in combination with a barrel, a bag reservoir contained therein, of an ink chamber supported by said barrel at the end opposite to the pen point thereof, and provided with means for attachment to said bag, an auxiliary compartment intermediate to said ink chamber and said bag and in communication with both thereof, a valve for controlling the communication between said compartment and said bag and chamber, a cap for the end of said pen and means controlled by said cap for controlling said valve.

In testimony whereof I have hereunto set my hand on this 6" day of May A. D., 1921.

ARTHUR WINTER.