

March 31, 1925.

1,531,800

J. J. LYNAGH

FOUNTAIN PEN

Filed March 8, 1924

Fig. 1.

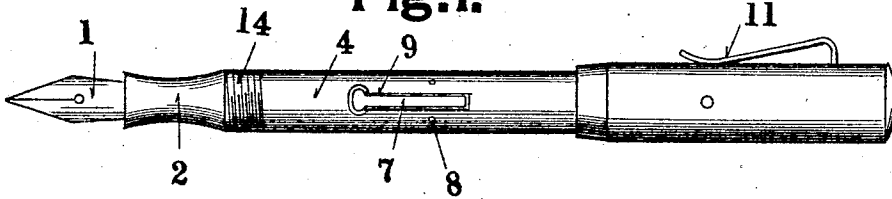


Fig. 2.

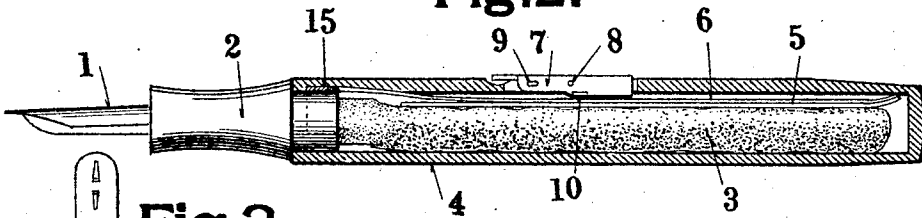


Fig. 3.

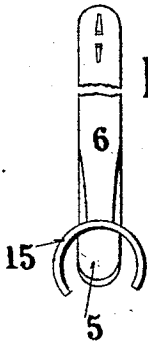


Fig. 4.

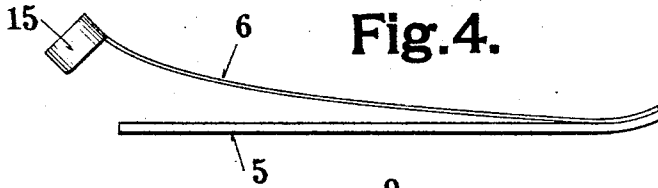


Fig. 5.

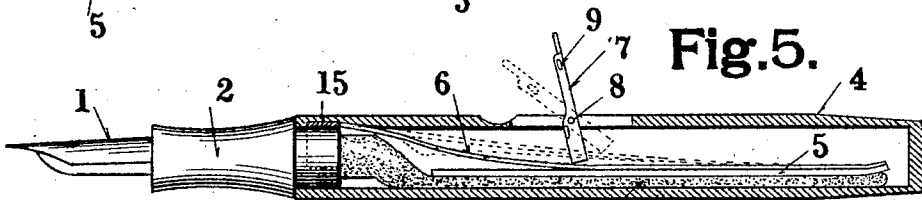


Fig. 8.

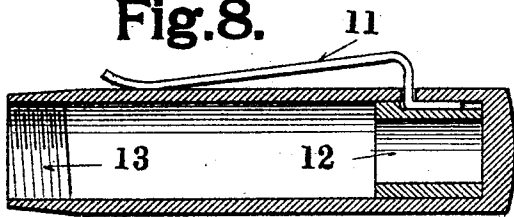
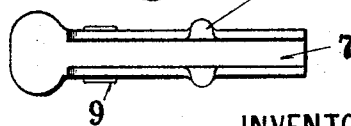


Fig. 6.



Fig. 7.



INVENTOR

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UNITED STATES PATENT OFFICE.

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FOUNTAIN PEN.

Application filed March 8, 1924. Serial No. 697,767.

To all whom it may concern:

Be it known that I, JOHN J. LYNAGH, a citizen of the United States of America, residing at the city of St. Louis, State of Missouri, United States of America, have invented a certain new and useful Fountain Pen, of which the following is such a full, clear, and exact description, as will enable anyone skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to fountain pens of the self-filling type in which the ink reservoir is in the form of a resilient collapsible sack, and the principal object of my invention is to provide improved mechanism for collapsing the sack which has the advantages of simplicity of construction, does not interfere with the return of the sack to its normal shape, and which collapses the sack in such a manner as to expel all of the air therefrom so that when the compression mechanism is released sufficient ink will be drawn in to completely fill the sack. The last mentioned feature will be recognized as a highly desirable one in that for a given desired quantity of ink the size of the sack, and consequently the other dimensions of the pen, can be made considerably smaller than if the compression mechanism fails to collapse the sack in such a manner as to expel all of the air therefrom.

Another object of my invention is to so arrange the lever operating the compression mechanism that it cannot be caught and unintentionally actuated when the pen is being put into the user's pocket.

My improved fountain pen has other desirable operative and constructional characteristics, as will appear from the following description:

In the drawings, which illustrates an embodiment of my invention, Figure 1 is an exterior view of the pen showing the cap in the position in which it may be placed when the pen is being used; Figure 2 is a longitudinal sectional view; Figures 3 and 4 are top and side views of the portions of the compression mechanism contained within the barrel of the pen, the parts being shown in the relative positions they occupy before being inserted; Figure 5 is a view

similar to Figure 2, but showing in dotted lines the position of the parts of the compression mechanism when the ink sack is partially collapsed, and in full lines the fully collapsed position; Figures 6 and 7 are side and bottom views of the manually actuated lever which forms a part of the compression mechanism; and Figure 8 is a sectional view of the cap of the pen showing the manner of attaching the clip for holding the pen in the user's pocket.

The pen 1 is mounted in pen section 2, to which the collapsible ink sack 3 is attached. This ink sack may be made of rubber and the interior of the sack is in communication with the pen through an opening (not shown) in pen section 2. The pen section is provided with an extension, as shown, which closely fits the interior surface of the end of the casing or "barrel" 4.

The mechanism for compressing the ink sack comprises a compressing member 5, preferably in the form of a rigid metallic bar adapted to contact with the ink sack throughout substantially its entire length. This presser bar 5 is attached at one end to a flat spring member 6, and the forward end of this spring member is provided with an integral collar 15 which, in the assembled pen, bears upon the interior surface of the barrel and forms the support for the spring 6, and consequently for the presser bar 5 secured thereto. Preferably the collar 15 embraces the extension of the pen section and is thus securely held between it and the barrel walls.

Figure 4 indicates the shape and relative position of the spring and presser bar when assembled ready for insertion into the pen barrel. This normal spring shape, shown in Figure 4, is such that when inserted in the pen barrel the spring is placed under such tension as not only causes the spring member to lie in parallelism with and adjacent to the inner wall of the barrel, but also on account of the riveting together of the spring and presser bar at one end, as shown, the forward and free end of the presser bar is held close to the spring; or in other words, the presser bar also lies parallel to the pen barrel walls and closely adjacent to the spring throughout its length. It results therefore that the ratio of the normal di-

diameter of the ink sack to the interior diameter of the pen barrel may be small without the compression mechanism interfering with the return of the sack to its normal diameter after being compressed.

The presser bar is actuated by a lever 7 positioned in a longitudinal opening through the wall of the barrel and carried by a pivot pin 8 on the barrel. It will be noted that the arm of the lever, which is manually engageable, is between the pivot point of the lever and the pen, and that the rear end of the lever engages the surface of the spring 6 at a point between the pivot point and the rear end of the pen barrel. This arrangement and the location and manner of attachment of the spring to the presser bar 5 causes the bar to first collapse the sack at its rear end, the position of the parts at a point intermediate closed and the fully open position of the lever being shown by dotted lines in Figure 5. It will therefore be apparent that with my improved compression mechanism the complete collapse of the ink sack first occurs at the rear end of the sack and advances progressively toward the front end of the sack as the actuation of the lever is continued, the rear end of the sack acting as a fulcrum for the bar. Thus all of the air is expelled from the sack, whereas if the presser bar maintained its position parallel to the casing walls during its compression action on the sack, or at any angle such that the walls of the sack might be completely collapsed at a point near the forward end of the sack before the compression of the rear end was completed, a greater or less quantity of air would be held in the sack. This is true because of the sack walls are closed at a point ahead of any air, further motion of the presser bar, even though it bring all the portions of the sack walls immediately under it closely together, would frequently cause the confined air merely to stretch the lateral portions of the sack rather than force its way through a closed portion of the sack ahead of it.

The lever 7 is provided with friction lugs 9 engaging with the wall of the slot in the barrel to hold the lever in closed position. In this position the rear end of the lever does not contact with the spring 6, and even though the operator after filling the pen does not push the lever into closed position, the rear end of the lever will not interfere with the return of the parts 5 and 6 to their normal position, as shown in Figure 2, and therefore will not offer any resistance to the full expansion of the sack and consequently its complete filling with ink.

The lever 7 is also provided with integral lugs 10 which prevent the lever from being moved further backward than shown in Figure 5 when the pen section and sack

have been removed for the application of a new sack, and thus prevent the user who does not understand the internal construction of the pen from erroneously manipulating the parts. Since a fountain pen is held in substantially vertical position with the point upward when being placed in the pocket, and since the lever 7 is so arranged that its free end extends upward under these conditions, it cannot catch on the edge or sides of the user's pocket when the pen is being placed therein even if the user neglects to press the lever to the closed position shown in Figure 2, and thus the accidental expelling of ink from the sack at this time is prevented.

As best shown in Figure 8, the holding-clip 11 is formed with an extension adapted to pass through an opening in the wall of the cap and to bear upon the inner wall of the cap. It is held in this position by means of a sleeve 12, which is provided with a longitudinal slot in its periphery to receive the extension, and forms a press fit with the interior bore of the cap.

It will be understood that when the pen is to be placed in the pocket the cap is over the forward end of the pen and the threaded portion 13 of the cap engages the threaded portion 14 on the barrel to bring the end of the sleeve 12 into air-tight relation with the forward end of the pen section 2.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a fountain pen, the combination of a casing, a resilient ink reservoir therein, mechanism for compressing the ink reservoir comprising a spring supported at one end only and a presser bar beneath the spring having a free end and its other end secured to the free end of the spring, the point of attachment of spring and presser bar being adjacent the rear end of the ink reservoir and the spring support being adjacent the forward end of the reservoir, and means for applying pressure to the presser bar at such point as to cause said bar to assume a position at such an angle to the axis of the reservoir during its compression movement as to complete its compression action on the rear end of the reservoir in advance of completion of compression of the forward portion thereof.

2. In a fountain pen, the combination of a casing, a resilient ink reservoir therein, a flat spring supported at one end within and near the forward end of the casing and normally lying parallel with and adjacent to the casing wall, the rear end of said spring being unsupported, a presser bar having one end secured to the unsupported end of the spring in such manner as to be normally held by the spring beneath and adjacent to said spring throughout its

length, and means for applying pressure to said spring and through it to the bar at a point intermediate its ends.

3. In a fountain pen, the combination of
 5 a casing, a resilient ink reservoir therein, mechanism for compressing the ink reservoir comprising a spring member supported at one end only and a presser bar beneath the spring having a free end and its other
 10 end secured to the free end of the spring, and means for applying pressure to the spring and through it to the presser bar at such point as to cause the compression of the rear end of the reservoir to be completed
 15 before completion of compression of the forward portion of said reservoir.

4. In a fountain pen, the combination of
 a casing, a resilient ink reservoir therein,
 20 a flat spring supported at one end within and near the forward end of the casing and normally lying parallel with and adjacent to the casing wall, the rear end of said

spring being unsupported, a presser bar having one end secured to the unsupported end of the spring in such manner as to be
 25 normally held by the spring beneath and adjacent to said spring throughout its length, and a pivoted lever mounted in the side wall of the casing, said lever having a manually engageable end exterior of the casing and its pivot point between said end and
 30 the rear end of the casing, the rear end of said lever being adapted to engage the upper surface of the spring to depress it and the presser bar, the area of operative engagement being so located with respect to
 35 the ink reservoir that the rear end of said reservoir will act as a fulcrum for the presser bar during the final portion of the compression motion of said bar. 40

In testimony whereof, I have hereunto set my hand this the 1st day of March, 1924.

JOHN J. LYNAGH.