Aug. 9, 1932. T. H. LASSAGNE 1,870,853

FOUNTAIN PEN

Original Filed Feb. 1, 1926

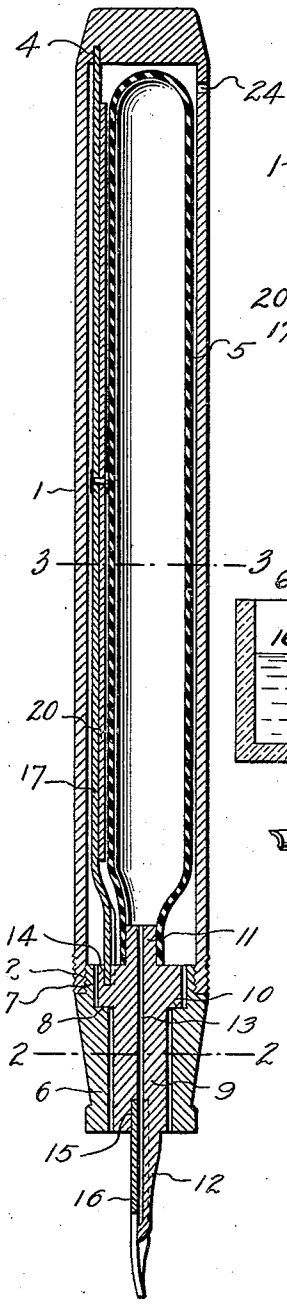


Fig. 1

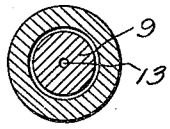


Fig. 2

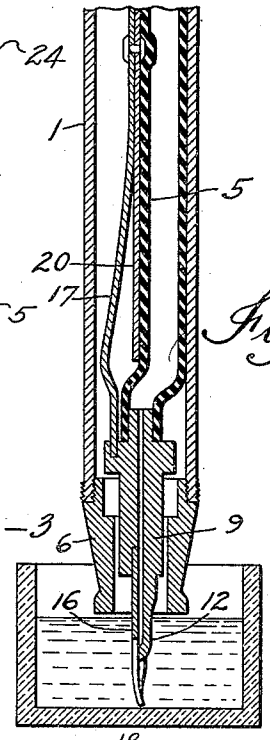


Fig. 6

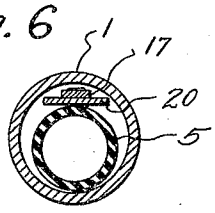


Fig. 3

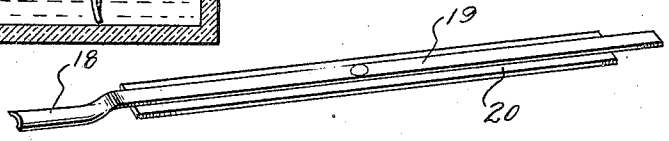


Fig. 4

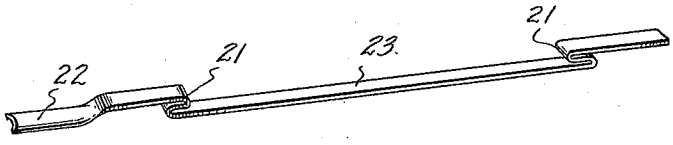


Fig. 5

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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

Refiled for abandoned application Serial No. 85,277, filed February 1, 1926. This application filed August 13, 1929. Serial No. 385,631.

The present invention relates to new and useful improvements in fountain pens, and pertains particularly to refill mechanism therefor.

This application is a substitute for application, Serial No. 85,277 filed February 1, 1926.

One of the objects of the present invention is to provide a novel mechanism for replenishing the supply of writing fluid contained in the reservoir of a fountain pen.

Another object of the present invention is to provide a novel mechanism for starting the flow of writing fluid to the writing point.

Another object of the present invention is to provide mechanism of the above type, so constructed and arranged as to permit its control by means of the writing point or mechanism adjacent thereto.

Another object of the present invention is to provide an improved and simplified form of presser bar for resilient collapsible reservoirs.

With these and other objects in view, reference is had to the accompanying drawing in which:

Figure 1 is a central longitudinal cross-section of the assembled fountain pen.

Figure 2 is a transverse section of the pen taken on the line 2—2 of Figure 1.

Figure 3 is a transverse section of the pen taken on the line 3—3 of Figure 1.

Figure 4 is a detail perspective of the assembled spring and presser bars.

Figure 5 is a detail perspective of a modified form of spring and presser bar.

The illustrated embodiment of the present invention comprises a main barrel 1 which is internally threaded at 2 to receive the externally threaded sleeve member 6, and provided with a seat 4 for one end of the spring bar hereinafter described. The sleeve 6 is provided with a reduced externally threaded portion 7 for reception in the threaded end of the barrel 1 and has an internal shoulder at 8 for retaining the feed block 9 which is provided with a cooperating external shoulder at 10. These shoulders act to limit the sliding motion of the feed block in the forward direction. At its forward end the feed block is provided with a conventional form of feed spoon 12 which is connected by duct 13 with a teat 11 on the rear end, which teat is connected in any suitable manner to the open end of the resilient ink sac 5 contained within the main barrel. By this arrangement, ink from the sac is fed to the writing point 16 supported in the feed block 9 at a point contiguous to the feed spoon 12.

The feed block is also provided at its rear side with a seat 14 for the forward end of the spring bar 17 which is supported at its rear end in the barrel seat 4. The spring bar has a portion 18 adjacent its front end bent longitudinally so as to transmit pressure without bending transversely, but throughout the greater part of its length it is flat as at 19 and adapted to bend transversely under pressure applied to the writing point in the direction of its axis. This spring bar is connected centrally of the flat portion 19, to a presser bar 20 of rigid material which is forced against the ink sac by a transverse bending of the spring bar to compress the sac.

A modified form of combined spring and presser bar is shown in Figure 5. In this form the spring and presser element consists of a single bar of spring material having S and reverse S shaped bends 21 adjacent its ends. The end adapted to be seated in the feed block is also longitudinally bent, as at 22, for the same purpose as outlined in the description of the other bar. When pressure is exerted on the ends in this form however, the greater part of the bending action takes place at the S bends and the long flat portion 23 is forced against the ink sac to compress it.

The length of the spring bar in both forms is so proportioned that in the complete assembly it is under a slight constant tension to keep the feed block as far forward as the limiting shoulders 8 and 10 will permit. This serves to bias the spring bar so that it will bend under pressure in the direction of the ink sac rather than against the barrel, and also acts to hold the feed block in its foremost position. Biasing of the spring bar may also be accomplished by making the head of the

rivet connecting the spring and presser bars of sufficient size to hold the bars in biased position. Both means are preferably employed, the second guarding against the effect of temperature changes on the spring bar which might decrease its length so as to void the biasing by spring tension.

Since the feed block acts to a certain extent as a piston, means are provided to prevent the pumping of ink into the barrel around the sac during a filling operation. The breather hole 24 has this effect and, in addition, a grease seal may be effected between the feed block and sleeve.

The filling operation is performed by inserting the pen point foremost into a bottle of ink until the point touches the bottom, pressing down upon the part of the barrel held in the hand until the feed block recedes, and then releasing the pressure, holding the end of the feed duct under the surface of the liquid until the sac has completely expanded drawing in its charge of ink. The recession of the feed block presses the ends of the spring bar together buckling the bar and forcing the presser portion against the sac, compressing it and forcing out the air contained therein. When the pressure is released, the resilient reaction of the spring bar forces the feed block back to its normal position with the shoulders 8 and 10 in engagement, and allows the ink sac, which is of resilient material such as rubber and so formed as to tend to take the expanded position, to expand and draw in a charge of ink from the bottle.

Actuation of compressing mechanism is also of assistance in starting the flow of ink to the point of the pen for writing, for which it is necessary only to press the point very slightly directly down on a surface.

Accidental compression of the ink sac in the act of writing will not take place for the reason that the force then exerted is at an angle to the longitudinal axis of the pen, and its longitudinal component will not exceed the force exerted in the opposite direction by the spring bar which is under constant tension. If found necessary in the case of persons who write with extreme pressure or hold the pen in an unusually erect position, a small locking pin may be removably inserted through the sleeve into the feed block and removed for filling.

I claim:

1. In a fountain pen, a barrel, a resilient ink sac in said barrel, spring presser bar mechanism for compressing said sac, and means including a writing point movably mounted in said barrel for actuating said mechanism.

2. In a writing implement, a barrel, a reservoir of variable capacity, a writing element movably mounted in said barrel, means operable by longitudinal recession of said element into said barrel for decreasing the capacity of said reservoir, and resilient means for arresting recession of said element.

3. In a writing implement, a barrel, a reservoir of variable capacity, a writing element support mounted for longitudinal movement in said barrel, means operable by recession of said support for decreasing the capacity of said reservoir, and resilient means for arresting recession of said element.

4. In a fountain pen, a barrel, a reservoir of variable capacity, a writing element movably mounted in said barrel, means operated by movement of said element for varying the capacity of said reservoir, and resilient means for limiting movement of said element in one direction.

5. In a fountain pen, a barrel, a reservoir of variable capacity, a writing element movably mounted in said barrel, means operated by movement of said element for varying the capacity of said reservoir, and resilient means for limiting movement of said element in one direction and restoring said element to normal position.

6. In a fountain pen, a barrel, a reservoir of variable capacity, a writing element movably mounted in said barrel, means operated by longitudinal movement of said element for varying the capacity of said reservoir, and resilient means for limiting the movement of said element in one direction.

7. In a fountain pen, a barrel, a reservoir of variable capacity, a writing element movably mounted in said barrel, means operated by longitudinal movement of said element for varying the capacity of said reservoir, and resilient means for limiting the movement of said element in one direction and restoring said element to normal position.

8. In a fountain pen, a barrel, a reservoir of variable capacity, a member movably mounted in the writing end of said barrel, means operated by movement of said member for varying the capacity of said reservoir, and resilient means for limiting movement of said member.

9. In a fountain pen, a barrel, a reservoir of variable capacity, a member movably mounted in the writing end of said barrel, means operated by movement of said member for varying the capacity of said reservoir, and resilient means for limiting the movement of and returning said member to normal position.

10. In a fountain pen, a barrel, a reservoir of variable capacity, a member mounted for longitudinal movement in the writing end of said barrel, means controlled by longitudinal movement of said member for varying the capacity of said reservoir, and resilient means for limiting movement of said member.

11. In a fountain pen, a barrel, a reservoir of variable capacity, a member mounted for longitudinal movement in the writing end of

said barrel, means controlled by longitudinal movement of said member for varying the capacity of said reservoir, and resilient means for limiting movement of and returning said member to normal position.

12. In a fountain pen, a barrel, a resilient ink sac in said barrel, a writing element carried by said barrel, and a member operated by relative movement between said writing element and said barrel for deforming said sac and urging said displaced elements toward normal position.

13. In a writing implement, a barrel, a reservoir of variable capacity, a writing element movably mounted in said barrel, and means operated by recession of said element into said barrel for decreasing the capacity of said reservoir and operating to return said element to writing position.

14. In a fountain pen, a barrel, an ink sac in said barrel, mechanism comprising a member laterally deformable by endwise compression for compressing said sac, and means including a writing element movably mounted in said barrel for actuating said mechanism.

15. In a fountain pen, a barrel, an ink sac in said barrel, mechanism operable in a plane substantially normal to the axis of said barrel for deforming said sac, and means including a writing point longitudinally movable in said barrel for actuating said mechanism.

16. In a fountain pen, a barrel, a reservoir of variable capacity in said barrel, means for varying the capacity of said reservoir comprising means operable in a direction substantially normal to the direction of application of force thereto, and an element movably mounted in the writing end of said barrel for actuating said means.

In testimony whereof I affix my signature.

THEODORE H. LASSAGNE.