Dec. 26, 1939. E. G. PEARSON 2,184,432

FOUNTAIN PEN

Filed March 6, 1939

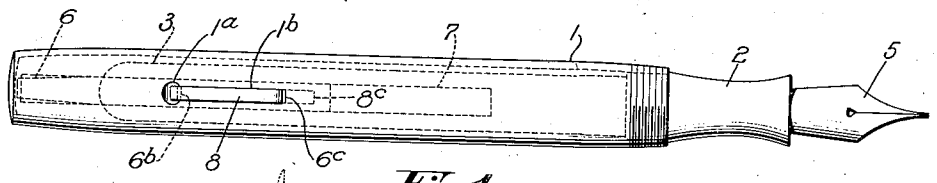


Fig. 1.

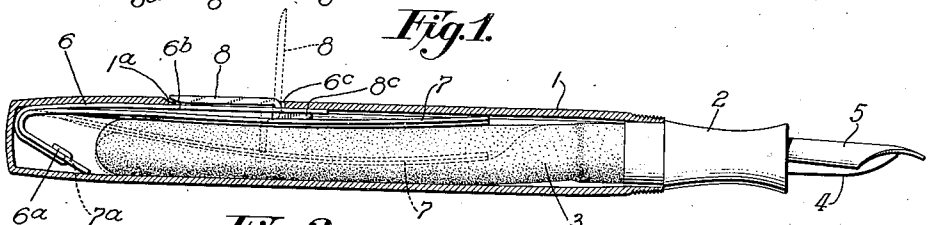


Fig. 2.

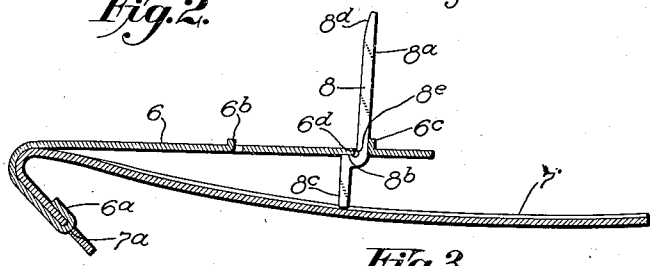


Fig. 3.

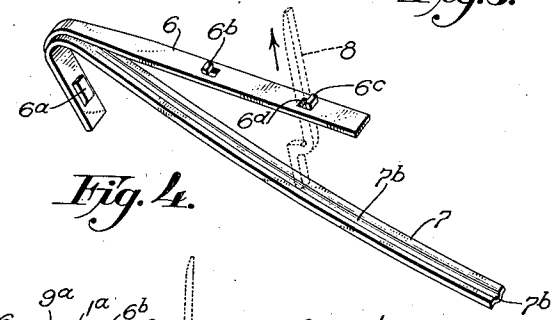


Fig. 4.

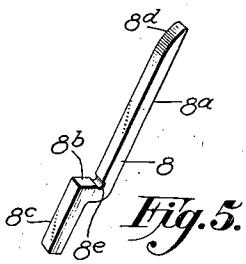


Fig. 5.

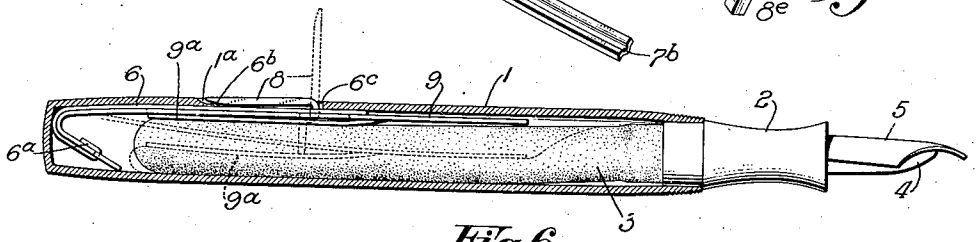


Fig. 6.

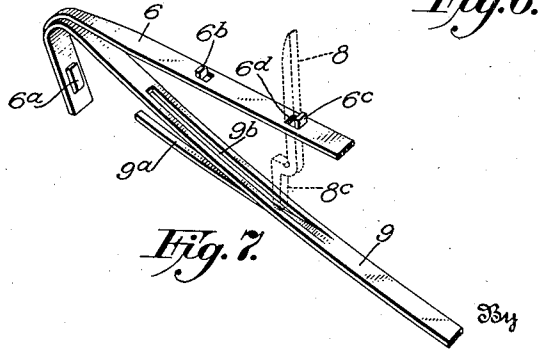


Fig. 7.

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FOUNTAIN PEN

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4 Claims. (Cl. 120—46)

This invention relates to fountain pens and more particularly to means for filling the ink reservoir of fountain pens.

As commonly constructed, each fountain pen comprises a barrel, a pen-point supporting section secured in one end of the barrel, a collapsible rubber sac secured to the section and constituting an ink reservoir, and means to collapse said reservoir whereupon its subsequent expansion will effect filling of the reservoir, as is well understood. The means for collapsing the sac may be called the "filling mechanism" inasmuch as it performs the initial step in the filling operation.

A filling mechanism for a fountain pen usually comprises a supporting member secured within the pen barrel, a presser-bar carried by the supporting member and extending lengthwise of the barrel in contact with the ink sac, and a pivoting actuating lever having one end portion located within the barrel for contact with the presser-bar and its other end portion located outside of the barrel and serving as a hand lever. Movement of the lever in one direction causes the presser-bar to be depressed, thereby collapsing the ink sac, while movement in the opposite direction permits elevation of the presser-bar and consequently expansion of the ink sac to effect filling thereof.

Various means heretofore have been proposed for pivotally mounting the actuating lever. Of these, one well known construction comprises perforated ears formed on the supporting-bar, a perforation formed transversely in the actuating lever and a pivot pin passed through said perforations and pivotally mounting the lever on the supporting-bar. This construction necessitates the formation of the ears on the presser-bar, the perforating of the ears and the lever, the provision of the pivot pin, a somewhat tedious assembling of the bar and lever, and the final riveting of the pivot pin, all of which are time-consuming and costly.

Another well known way of pivotally mounting the actuating lever consists in forming an annular groove within the inside of the barrel, pivotally mounting the lever on a split wire ring and finally inserting the wire ring in the annular groove in the barrel. This construction necessitates, in addition to the provision of the split ring, and a rather complicated assembling operation, the performance of an extra operation on the barrel, i. e., the cutting of the annular groove therein. This construction therefore is also unduly expensive.

This invention has as its primary object to provide an improved and simplified filling mechanism for fountain pens which will eliminate certain ones of the parts and operations heretofore considered necessary and essential. This object has been attained by the provision of a filling mechanism comprising only three elements viz., a supporting-bar, a presser-bar and an actuating lever. The lever is pivotally connected to the supporting-bar without the use of any separate pivoting element such as the pivot-pin and pivot-ring of prior constructions. This has been made possible by so forming the lever and its support that a portion of the support forms a fulcrum point about which the lever may be turned while the tension of the presser-bar maintains the lever in pivotal contact with said fulcrum point. The present construction also greatly simplifies the assembling of the lever on its supporting-bar as such assembling is effected by merely inserting one end of the lever through an aperture formed in the bar.

A drawing illustrating a preferred form of this invention, and one modification thereof, has been annexed as a part of the disclosure and in such drawing, Figure 1 is a plan view of a fountain pen embodying a preferred form of the invention.

Figure 2 is a longitudinal section through Figure 1, with the so-called filling mechanism and portions of the pen in elevation.

Figure 3 is an enlarged longitudinal sectional view of the filling mechanism.

Figure 4 is a perspective view of the filling mechanism, showing, in dotted lines, the actuating lever partially inserted in an aperture in its supporting-bar.

Figure 5 is a perspective view of the actuating lever.

Figure 6 is a view similar to Figure 2, but showing a modified form of filling mechanism.

Figure 7 is a perspective view of the modified filling mechanism detached from the pen.

Referring more specifically to the drawing, the invention is disclosed as embodied in a fountain pen comprising a tubular barrel 1, a pen-point supporting section 2, a collapsible rubber sac 3 attached to the section 2 and, constituting an ink reservoir, a feeder 4 and a pen-point 5.

The sac 3 may be filled with ink by first being collapsed to expel the air therefrom and thereafter to be allowed to expand while the feeder 4 and the point 5 are submerged in ink. Expansion of the sac causes ink to be drawn into the reservoir, as is well understood. The means for

collapsing the sac is commonly known as the filling mechanism and as shown in the preferred form of this invention, illustrated in Figs. 1 to 5 inclusive, comprises a supporting-bar 6 adapted to be inserted into and secured within the barrel 1, a resilient presser-bar 7 secured to the supporting-bar and having a portion in contact with the sac 3, and an actuating lever 8 fulcrumed on the supporting-bar and adapted to depress the presser-bar, thereby to collapse the ink sac. The supporting-bar and presser-bar are preferably secured together adjacent one end by having the end 6^a of the former passed through a slot 7^a in the latter and folded back as shown most clearly in Fig. 3. The barrel 1 is formed with a longitudinal slot 1^b adapted to receive the outer end of the actuating lever 8 when in its normal operating position as shown in Figs. 1 and 2. Tangs 6^b and 6^c, struck up from the supporting-bar 6, engage the end walls of the slot 1^b and locate the filling mechanism in the barrel and hold it against endwise movement therein.

The actuating lever is preferably made as shown most clearly in Figs. 3 and 5 and comprises a longer outer leg portion 8^a adapted to be passed upwardly through a slot 6^d from which the tang 6^c is punched and to serve as a finger-grasp, an intermediate shoulder 8^b, adapted to engage the underside of the supporting-bar, and a shorter inner leg 8^c adapted to engage and depress the presser-bar 7, in opposition to the resiliency of the latter, when the lever is swung upwardly to the position shown in full lines in Fig. 3 and in dotted lines in Fig. 2. The lever 8 may be assembled with the supporting-bar by merely spreading apart the supporting-bar and the presser-bar, as shown in Fig. 4, and pushing the upper end of the lever through slot 6^d, in the direction indicated by the arrow in that figure. After the lever has been inserted in the slot 6^d, the tension of the presser-bar holds the shoulder 8^b of the lever in contact with the under surface of the supporting-bar whereupon the end wall of the slot, opposite the tang 6^c, forms a perfect fulcrum for the lever 8. At the juncture of the leg 8^a and the shoulder 8^b the metal is cut away slightly as indicated at 8^e thereby to afford clearance and prevent binding when the lever is turned about its fulcrum. The tang 6^c, in addition to holding the filling mechanism in the barrel, serves as a stop for limiting the upward swinging movement of the lever 8, as clearly shown in Fig. 3. The outer end of the lever 8 is chamfered on its underside at 8^d and the barrel 1 is cut away as at 1^a beneath the chamfer on the lever thereby to afford clearance so that a finger nail or other object may be inserted beneath the lever to lift it.

The modified filling mechanism illustrated in Figs. 6 and 7 is similar to that hereinbefore described and differs therefrom only in the construction of the presser-bar. Insofar as the parts of the modified form are identical with the parts of the preferred form the same reference characters have been applied thereto.

The presser-bar of the modified construction is designed to produce a more complete collapsing of the ink sac preparatory to the filling operation than does the preferred form. It will be noted in Fig. 2 that when the presser-bar is depressed to the position shown in dotted lines the left end portion of the sac is only partially collapsed and therefore when the sac is permitted to expand it will not be completely filled with ink. In the modified construction the presser-bar 9 is formed, intermediate its ends, with a rearwardly extending tongue portion 9^a which is punched from the main body portion of the presser-bar. This tongue portion is engaged near its juncture with the main body portion of the presser-bar by the lower arm 8^c of the actuating lever 8. Thus as the lever is swung upwardly to the position shown in dotted lines in Fig. 6 the forward portion of the presser-bar collapses the forward end of the ink sac and the tongue portion 9^a completely collapses the rear end of the sac.

In the construction shown in Fig. 4 the inner end of the lever 8 moves in a channel 7^b formed in the upper surface of the presser-bar, whereas in the modified construction the inner end of the lever moves in a slot 9^b formed by the punching out of the tongue 9^a.

From the foregoing it will be seen that each of the improved filling mechanisms provided by this invention comprises only three elements viz. a supporting-bar, a presser-bar and an actuating lever, all of which may be made from flat stock by simple punching operations. It will also be perceived that the actuating lever has a perfect fulcrum on the supporting-bar and yet no separate element is provided for the fulcrum and no extra machining operations are required.

Having thus described this invention what I claim and desire to secure by Letters Patent of the United States is:

1. In a fountain pen having a barrel provided with a longitudinal slot, a pen-point supporting section secured in said barrel and an ink-sac attached to said section, means for collapsing said sac comprising a support arranged within the barrel and having an aperture therein, tangs projecting from said support and engaging the walls at the ends of the slot in the barrel to hold said support against movement in said barrel, a presser-bar secured to said support and normally engaging said ink sac, and a swingable actuating lever projecting through the aperture in said support and having a shoulder engaging said support adjacent said aperture thereby forming a fulcrum for the lever, said lever having a manually engageable portion at one side of said shoulder and a presser-bar engaging portion at the other side thereof.

2. In a fountain pen having a barrel provided with a longitudinal slot, a pen-point supporting section secured in said barrel and an ink-sac attached to said section, means for collapsing said sac comprising a supporting-bar arranged within said barrel and having an aperture therein normally in registry with the slot in said barrel, a presser-bar secured to said support and having a portion contacting with said ink-sac, and an actuating lever for depressing said presser-bar, said lever being formed intermediate its ends with a transverse shoulder and with leg portions extending oppositely from said shoulder, one of said leg portions projecting through the aperture in said supporting-bar and through the slot in the barrel and the other leg-portion engaging said presser-bar, the juncture of said shoulder and the first named leg-portion engaging said supporting-bar adjacent the aperture therein and therewith forming a fulcrum for said lever.

3. A filling mechanism for a fountain pen comprising a supporting-bar having an aperture therein intermediate its ends and an upstanding tang adjacent said aperture, a resilient presser-bar having one end secured to one end of said supporting-bar and its major portion extending

beneath and in line with said supporting-bar, and an actuating lever comprising outer and inner end portions and an intermediate transverse shoulder, the outer end portion being projected through the aperture in said supporting-bar and the shoulder engaging said supporting-bar adjacent said aperture thereby forming a fulcrum for said lever, the inner end portion engaging said presser-bar and depressing the same when the outer end of said lever is swung upwardly, the tang on said supporting-bar serving as a limit stop for the upward movement of said lever.

4. In a fountain pen having a barrel, a pen-point supporting section secured in said barrel and an ink-sac attached to said section; means for collapsing said sacket comprising a sheet metal support secured within said barrel and provided, intermediate its ends, with an aperture; a sheet metal presser-bar secured to said support adjacent one end by a portion of one passed through an opening in the other and bent backwardly thereon, said presser-bar engaging said sac beneath said support; and a swingable actuating lever made from substantially flat stock and formed with a shoulder, said lever being fulcrumed on said support by rolling engagement of said shoulder with a portion of the support adjacent said aperture, said lever being arranged partially within said aperture and having one end portion located above said support for manual manipulation and another end portion located beneath said support and acting to depress said presser-bar when said actuating lever is swung in one direction.

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