

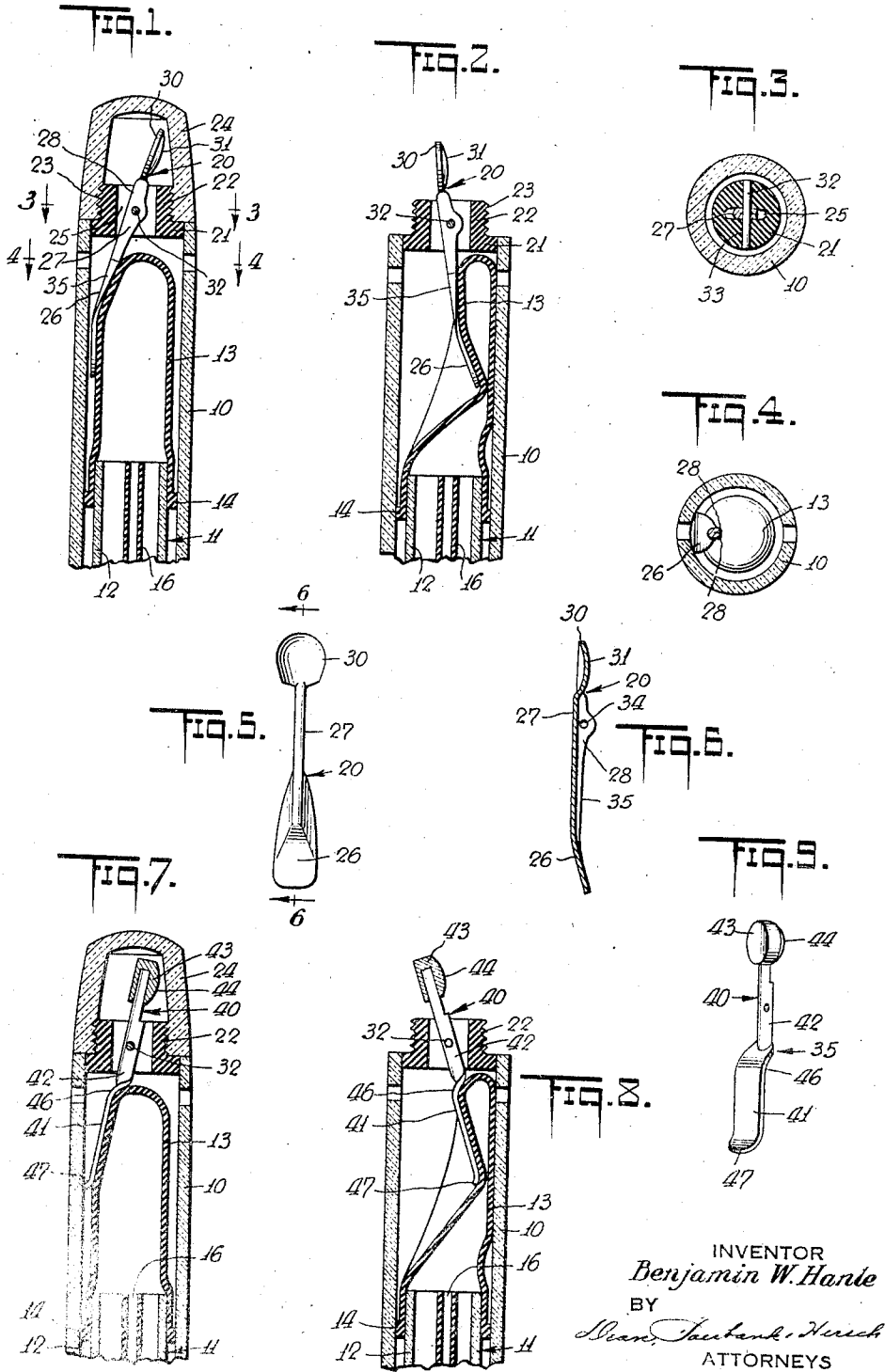
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FOUNTAIN PEN

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FOUNTAIN PEN

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2 Claims. (Cl. 120—46)

The present invention is a continuation in part of my co-pending application Serial No. 195,296, filed March 11, 1938, Patent Number 2,170,242, Aug. 22, 1939, and relates to fountain pens, and more especially to ink filling mechanisms for fountain pens of the vacuum type.

One object of the present invention is to provide improved, simple and effective means, devoid of the usual cam and spring expedients, and accessible for operation from the outside of the pen barrel, for collapsing the flexible portion of the ink reservoir for ink filling operations.

Various other objects, features and advantages of the invention will be apparent from the following particular description, and from an inspection of the accompanying drawing, in which:

Fig. 1 is a fragmentary end view in longitudinal cross-section, showing one form of the invention on an enlarged scale, applied to one desirable form of fountain pen, with the collapsible portion of the ink reservoir in fully inflated condition,

Fig. 2 is a fragmentary view similar to that of Fig. 1, but showing the cap removed, and the collapsible portion of the ink reservoir in collapsed position during ink filling operation,

Figs. 3 and 4 are transverse sectional views taken respectively on lines 3—3 and 4—4 of Fig. 1,

Fig. 5 is a front elevation on an enlarged scale of the lever of Fig. 1 for collapsing the flexible portion of the ink reservoir,

Fig. 6 is a longitudinal section of the lever taken on line 6—6 of Fig. 5,

Fig. 7 is a fragmentary end view in longitudinal cross-section, showing another form of the invention on an enlarged scale, with the collapsible portion of the ink reservoir in fully inflated condition,

Fig. 8 is a fragmentary view similar to that of Fig. 7, but showing the cap removed and the collapsible portion of the ink reservoir in collapsed position during ink filling operation, and

Fig. 9 is a perspective of the lever shown in Figs. 7 and 8 for collapsing the flexible portion of the ink reservoir.

Referring now to Fig. 1, there is shown a desirable form of fountain pen of the vacuum type, with which my improved filling mechanism is associated. This fountain pen is of conventional external appearance, and has a removable cap (not shown), adapted in closed position of the pen to be screwed upon the threaded portion of the barrel 10. In the interior of the barrel 10 is an ink reservoir 11, comprising a cylindrical tube 12, desirably of rigid transparent material

such as glass or Celluloid, and a flexible bulb 13, advantageously in the form of a rubber nipple, slipped tightly over the upper end of said tube, and firmly cemented in sealing relation thereto. Embracing this tube 12 at the lower end of the bulb 13, and cemented to said tube and said nipple is a ring 14, serving to center the upper section of the ink reservoir 11 with respect to said barrel. The forward end of the fountain pen is provided with a section carrying a feed and a nib (not shown), these being of conventional construction. Connected to the feed is an air vent tube 16 extending axially in the ink reservoir 11.

The fountain pen construction so far described per se forms no part of the present invention, and is described in detail in my co-pending application above referred to.

In the construction of Figs. 1 to 6, the upper end of the barrel 10 carries a lever 20, which which serves to collapse the bulb 13 in filling. For that purpose, the rear open end of the barrel 10 has press-fitted or otherwise firmly secured therein a plug 21, having an upwardly extending nipple 22, provided with an external thread 23 for receiving a cap 24. Nipple 22 is provided with a central elongated diametrical slot 25, extending the full length thereof for receiving the lever 20. This lever 20 is made from a flat strip of metal, stamped to form a substantially flattened comparatively wide bulb-engaging section 26 of single thickness at its lower forward end, a dished finger piece 30 of single thickness at its upper end in the form of a shallow bowl, presenting a convex finger engaging surface 31, and an intermediate doubled-up fulcrum section 27 between said end sections 26 and 30, serving as a shank for said forward section, and having contacting flanges or folds 28 to impart substantial rigidity to said fulcrum section 27. The fulcrum section 27 extends in the slot 25, and is pivotally supported on the plug 21 by a pivot pin 32, desirably press-fitted through diametrically aligned holes 33 in nipple 22, and passing loosely through holes 34 in the flanges 28 of said fulcrum section.

The upper portion of the bulb engaging section 26 desirably tapers towards the fulcrum section 27, and is provided with side flanges 35, which constitute extensions of the flanges 28, and which are slightly inclined with respect to the central longitudinal portion of said section 26, to impart transverse curvature to said upper portion. This transverse curving of the lever section 26 imparts rigidity thereto, and also serves to afford substantially conforming engagement thereof with the bulb 13.

The upper end of the lever 20 when not in use is enclosed in the cap 24, threaded onto the nipple 22, and having an outer surface continuous with the outer surface of the barrel 10. The lever section 26 only engages the upper portion of the bulb 13, and the lever when inoperative will be in the position shown in Fig. 1.

When it is desired to fill the pen, the cap 24 is removed to expose the finger piece 30, so that said finger piece is accessible to direct finger action. For ink filling action, the barrel 10 is held in a hand, while the thumb of that hand presses the finger piece 30 forwardly. The lever section 26 as well as the longitudinal section of the bulb 13 engaged thereby is sufficiently short, so that the lever 20 will yield easily to this pressing action of the thumb, and will rotate in a counter-clockwise direction as shown in Fig. 2 to collapse the upper section of the bulb 13. This lever action is repeated a number of times until the pen is filled.

The inherent resiliency of the bulb 13 serves to return said lever to home position shown in Fig. 1, and to maintain it there after it is manually released, following the bulb collapsing operation shown in Fig. 2. Thus the usual expedients of springs, cams or the like are dispensed with.

In the construction shown in Figs. 7, 8 and 9, the lever 40 is made from a flat strip of metal, stamped to form a substantially flattened comparatively wide bulb engaging section 41 of single thickness, and a doubled-up fulcrum section 42, forming a rigid comparatively narrow bar shank of substantially uniform rectangular cross-section throughout its length, and perforated for loosely receiving the pivot pin 32 as in the construction of Figs. 1 to 6. The upper end of this shank extends upwardly beyond the nipple 22, and has frictionally secured thereto a button 43 serving as a thumb piece in the operation of the lever, and provided with a curved thumb engaging face 44.

The bulb engaging section 41 of the lever 40 is offset at 46, so that said arm in the inflated position of the bulb 13 will conform generally with the contour of said bulb as shown in Fig. 7, and will effect the complete collapse of the upper portion of said bulb in the bulb collapsing position shown in Fig. 8. The lower end 47 of the lever section 41 is desirably turned outwardly, so that it will not dig into the bulb 13 and injure it during bulb collapsing operation.

As many changes could be made in the above article, and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawing, shall be interpreted as illustrative, and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a fountain pen of vacuum type, in which there is provided an ink reservoir having a flexible bulb at its rear end, and an outer barrel encircling said reservoir, a plug firmly retained in the rear end of said barrel, and having a nipple, said plug having a slot extending the full length thereof, a lever extending through and pivotally supported in said slot, and having a forward bulb collapsing section in said barrel conformed near its pivot to the shape of and directly engaging said bulb near the closed extremity of the latter, and a rear section extending outwardly beyond said plug, and affording a thumb piece for the operation of said lever, said lever being restored to its inoperative bulb-inflated position only by the inherent resiliency of said bulb, and a removable cap threaded on to said nipple and serving to enclose said thumb piece.

2. A fountain pen of the vacuum type, in which there is provided an ink reservoir, having a short rear flexible section, an air vent tube extending substantially to the lower end of said flexible section, and an outer barrel encircling said reservoir section, a plug at the rear end of said barrel, and having an elongated slot extending the full length thereof, a lever extending through said slot, and comprising a single strip of metal with a substantially flat forward section of single thickness, wholly beyond the end of said vent tube conformed to the shape of and adapted to directly engage said flexible section for collapsing the same, a rear shallow bowl serving as a finger piece, and a doubled-up fulcrum section between said forward section and said finger piece, and a separate pivot pin transversely through said plug, and extending through said fulcrum section for pivotally mounting said lever with respect to said plug, said lever being restored to its inoperative position only by the inherent resiliency of said reservoir section.

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