

RESERVE COPY
PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in or relating to Fountain or Reservoir Pens.

I, WILLIAM LIVSEY (British Nationality), of 13, Groveland Road, Wallasey, in the County of Chester, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to sac self-filling fountain or reservoir pens of the type provided with an end plunger for the purpose of bending a spring to cause or effect the collapse of the sac in the ink-charging operation.

10 The present invention has for its object the provision of simple and convenient means whereby the sac-compressing spring may be actuated on the partial rotation of an external knob associated with a detachable end cap or cover of the pen body or barrel, said means, according to my invention, consisting of a non-rotatable plunger having helical groove or slot and pin attachment with the external knob so that it may be reciprocated in the end cap or cover and thereby control the movement of the customary plunger which actuates the sac-compressing spring.

15 According to one mode of carrying the invention into effect, the external operating knob is connected with a hollow or recessed stem disposed in the interior of the end cap or cover and the non-rotatable cap plunger is loosely inserted into said stem, operative connection between these parts being obtained by means of a pin which is passed transversely through said plunger and through one or more helical or spiral slots formed in the wall of the stem into vertical guide grooves or recesses provided interiorly of the end cap or cover.

20 In another embodiment a cap plunger is in the form of a hollow or recessed member having one or more helical or spiral slots in its wall, whilst the stem of the external knob is inserted into and operatively connected with said plunger by means of a pin which passes transversely through the stem into the helical or spiral slot or slots of the plunger. In this construction rotation of the cap plunger may be prevented by means of a pin or one or more projections provided or formed on the cap plunger and entered into one or more vertical guide grooves or recesses in the wall of the end cap or cover; or, alternatively, a pin may be inserted through the wall of the end cap or cover into a vertical guide slot, groove, or recess in the cap plunger.

25 In a further mode of embodiment, one or more helical or spiral grooves or recesses are provided in a solid stem of the external knob for the reception of one or more inwardly projecting pins or studs formed or provided on a hollow cap plunger; in this arrangement rotation of the cap plunger may be prevented by either of the means before referred to.

30 In all of the examples before described said external knob and parts associated therewith are automatically returned to their original positions after the sac compressing operation through the influence of said sac-compressing spring.

35 Dated this 14th day of May, 1929.
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COMPLETE SPECIFICATION.

Improvements in or relating to Fountain or Reservoir Pens.

I, WILLIAM LIVSEY (British Nationality), of 13, Groveland Road, Wallasey, in the County of Chester, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

[Price 1/-]

This invention relates to sac self-filling fountain or reservoir pens of the type in which a non-rotatable plunger is reciprocably disposed at the rear end of the pen body or barrel for the purpose of bending a spring to cause or effect the collapse of the ink sac in the ink-charging operation. The present invention aims to provide

new or improved means whereby the sac-compressing spring may be actuated on the rotary movement of an external operating knob or like member permanently associated with the detachable end cap, such means comprising a supplemental plunger non-rotatably disposed within the end cap and connected with the external knob in such manner that on rotary movement being imparted to the knob, it (the supplemental plunger) will be moved longitudinally of the end cap to depress the customary sac-actuating plunger in the ink-charging operation.

According to my invention, said external knob or like member is connected with a stem, or the like, which is telescopically associated with said supplemental plunger in the end cap, and one of said last-named members—i.e. the stem, or the like, or the supplemental plunger—is helically or spirally grooved, slotted, or ribbed and receives or engages one or more lateral projections on the other of the said members, so that rotary movement of said stem will effect longitudinal movement or displacement of said plunger; and in order to prevent rotation of said supplemental plunger, one of said non-rotatable members—i.e. the end cap, or the supplemental plunger itself—is longitudinally grooved, slotted, or ribbed and receives or engages one or more lateral projections on the other of said non-rotatable members.

In one embodiment, an external knob is connected with a hollow or recessed stem and the supplemental plunger is loosely inserted into and operatively connected with the stem by means of a lateral pin or projection passing through the supplemental plunger and through diametrically opposed helical or spiral slots in the stem into diametrically opposed longitudinal guide grooves or recesses formed in the inner wall of the end cap.

In another embodiment, an external knob is connected with a stem which is loosely inserted into and operatively connected with a hollow or recessed supplemental plunger by means of a lateral pin or projection passing through the stem into diametrically opposed helical or spiral slots in the supplemental plunger, and the supplemental plunger is provided with diametrically opposed projections which are entered into diametrically opposed longitudinal guide grooves or recesses formed in the inner wall of the end cap.

In a further embodiment, an external knob is connected with a stem which is loosely inserted into and operatively connected with a hollow or recessed supplemental plunger by means of a lateral pin

or projection passing through the supplemental plunger into a helical or spiral groove or recess formed in the stem, and another lateral pin or projection passes through the end cap into a longitudinal guide slot, groove, or recess in the plunger.

Preferably, in each of the aforesaid embodiments the inclination of the helical or spiral slots, grooves, or recesses is such that the external knob and parts associated therewith automatically reassume their original positions after the sac-compressing operation through the longitudinal return movement of the customary sac-actuating plunger acting under the influence of the sac-compressing spring.

I will further describe my invention with the aid of the accompanying sheet of explanatory drawings which illustrate, by way of examples only, three modes of carrying the same into effect.

In said drawings:—

Fig. 1 is a longitudinal section of a portion of a sac self-filling fountain or reservoir pen of the kind specified provided with my improvements, and Figs. 2 and 3 are similar views of modified constructions.

In the several views like characters of references denote like or equivalent parts wherever they occur.

Referring first to Fig. 1, *a* indicates the rear or shank end of the pen body or barrel, *b* the ink sac, *c* the sac-compressing spring, *c'* the presser bar, and *d* the reciprocating plunger, all as customarily employed in fountain pens of the type referred to, the pen being filled by depressing (and subsequently releasing) plunger *d* to bend spring *c* which acts upon the presser bar *c'* to collapse sac *b* in the ink-charging operation.

Screwed onto the rear or shank end of pen body or barrel *a* is a detachable end cap or cover *e* which is provided with an aperture *e'* wherethrough a reduced portion *f'* of a hollow or recessed stem *f* disposed in the interior of the cap projects to serve as a means of attaching an external operating knob *g* whereby rotary movement may be imparted to the stem from the exterior of the pen.

Loosely inserted into said hollow or recessed stem *f* is a non-rotatable supplemental plunger *h* which, as shown, abuts against the customary plunger *d*. Said supplemental plunger *h* is operatively connected with the stem by means of a lateral pin or projection *j* passing through said plunger and through diametrically opposed helical or spiral slots *k* formed in the wall of the stem; the outer ends of pin *j* also project into diametrically opposed longitudinal guide grooves or re-

cesses l formed in the inner wall of end cap e in order to prevent rotation of plunger h .

Normally, the parts are in the positions shown in Fig. 1.

When, however, it is desired to charge the sac with ink, knob g is partially revolved in a clockwise direction to impart corresponding movement to the stem f, f^1 ; thereupon pin j —due to the turning movement of the helical or spiral slots k of stem f, f^1 relative to the guide grooves or recesses l in the stationary end cap e —is caused to move longitudinally along said grooves or recesses l , carrying plunger h with it, and, in consequence, the supplemental plunger h depresses the customary plunger d to bend spring c which acts upon presser bar c^1 to collapse sac b .

Immediately upon the release of knob g the now-flexed spring c —due to its resiliency—reassumes its normal configuration and in so doing acts upon the customary plunger d and returns this member together with knob g and parts associated therewith to their original positions simultaneously with the expansion and charging of sac b with ink. This automatic return movement of the parts is due to the particular angle or inclination at which the helical or spiral slots k are set, but if the inclination of such slots is less than that shown it may be necessary to turn knob g by hand to return the parts to their original positions.

In the modification illustrated in Fig. 2, the supplemental plunger h is itself hollowed out or recessed, as indicated, for the insertion of the stem f, f^1 , and these parts are operatively connected together by means of a lateral pin or projection j passing through the stem into diametrically opposed helical or spiral slots k formed in the wall of the plunger. The supplemental plunger, in this case, is prevented from rotation by the provision thereon of diametrically opposed projections h^1 which operate in the longitudinal guide grooves or recesses l formed in the inner wall of end cap e . Thus, when knob g is partially rotated in a clockwise direction, pin j turns with the knob and acts in the helical or spiral slots k in the supplemental plunger to move the latter longitudinally of end cap e in the ink-charging operation.

In the modification illustrated in Fig. 3, longitudinal movement or displacement of the hollow or recessed supplemental plunger h is effected through the medium of a lateral pin or other projection j passing through the plunger into a helical or spiral groove or recess k^1 formed in the stem f, f^1 , whilst rotation of the supplemental plunger is prevented by means of

another lateral pin m passing through the wall of end cap e into a longitudinal guide slot n formed in the plunger.

It will be noted that in each of the examples hereinbefore described, a shoulder f^2 on the stem together with the knob g constitutes the means for preventing longitudinal movement or displacement of the stem relative to end cap e .

It is to be clearly understood that I do not confine myself to the precise details of construction and arrangement of parts hereinbefore described, as various alterations or modifications may be made without departing from the spirit and scope of the invention as defined by the claims; for instance, the telescopically disposed members f, f^1 and h may be operatively connected in any convenient manner other than that illustrated, provided, of course, longitudinal movement is imparted to the supplemental plunger h on the rotary movement of the stem f, f^1 . In this connection it may be mentioned that one of the members may be internally screw-threaded for the reception of an externally screw-threaded co-acting member.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a sac self-filling fountain or reservoir pen of the type hereinbefore referred to and wherein a plunger is reciprocally disposed in the rear of the pen body or barrel for the purpose of bending a spring to cause or effect the collapse of the sac in the ink-charging operation, means whereby said sac-compressing spring may be actuated on the rotary movement of an external operating knob or like member permanently associated with a detachable end cap or cover of the pen body or barrel, such means comprising a supplemental plunger non-rotatably disposed within said end cap and connected with said external knob in such manner that on the rotary movement being imparted to said knob in the sac-charging operation, it (the supplemental plunger) will be moved longitudinally of the end cap to depress the customary sac-actuating plunger.

2. A sac self-filling fountain or reservoir pen as claimed in the preceding claim, wherein said external knob or like member is connected with a stem, or the like, which is telescopically associated with said supplemental plunger in the end cap or cover, and one of said last named members—i.e. the stem, or the like, or the supplemental plunger—is helically or spirally grooved, slotted, or ribbed and receives or engages one or more lateral projections on the other of said members,

for the purpose specified.

3. A sac self-filling fountain or reservoir pen as claimed in either of the preceding claims, wherein one of said non-rotatable members—i.e. the end cap or cover, or the supplemental plunger contained therein—is longitudinally grooved, slotted, or ribbed and receives or engages one or more lateral projections on the other of said non-rotatable members, for the purpose specified.

4. A sac self-filling fountain or reser-

voir pen of the kind specified provided with means for operating the customary sac-actuating plunger, substantially as hereinbefore described and illustrated in Fig. 1, or Fig. 2, or Fig. 3 of the accompanying drawings. 15

Dated this 12th day of February, 1930.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

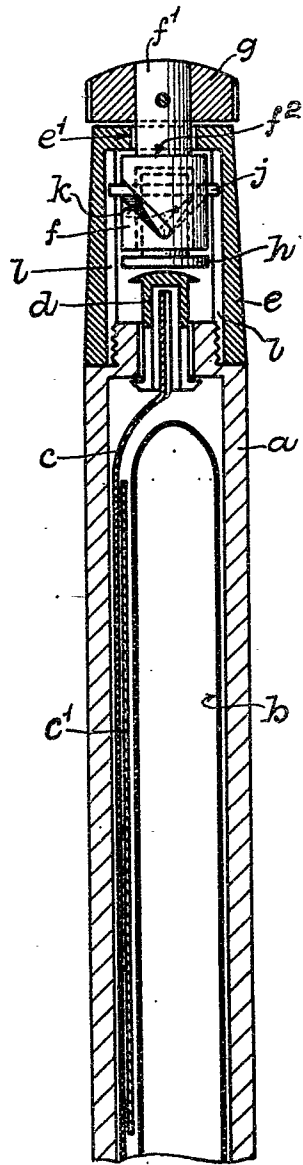


Fig. 2.

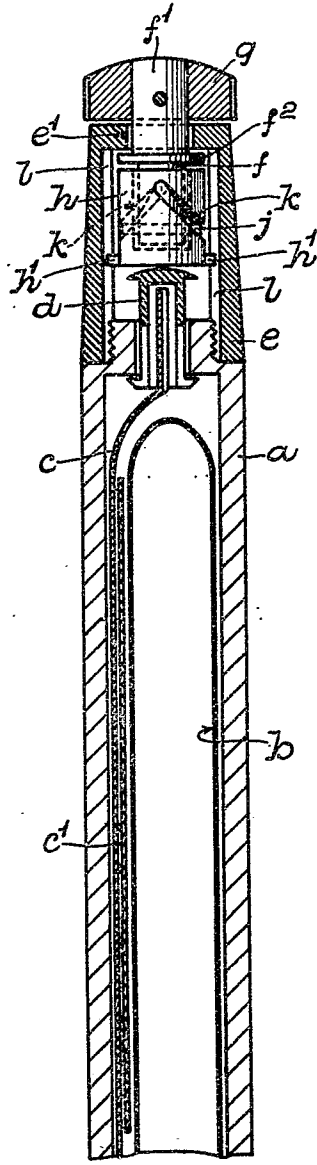


Fig. 3.

