

PATENT SPECIFICATION

Application Date: July 8, 1927. No. 18,126 / 27.

297,903

Complete Left: April 10, 1928.

Complete Accepted: Oct. 4, 1928.



PROVISIONAL SPECIFICATION.

Improvements in Fountain Pens.

I, FREDERICK ELSEY DOUBLE, (British), 22, Kilmorey Gardens, St. Margarets, Middlesex, do hereby declare the nature of this invention to be as follows:—

5 My invention relates to fountain pens of the type in which a collapsible ink bag is used for the purpose of filling the pen. There is a known type of this pen in which a short axle plunger is situated at the back end of the ink barrel and is usually contained in a small cover or end cap.

10 To operate the pen the end cap is removed and the plunger depressed by the thumb or finger, which acts against the spring elements or presser bar and thus deflates the ink bag.

15 Removing the pressure of the thumb or finger releases the presser bar which is restored to its original position.

20 According to my invention, I entirely dispense with the necessity of removing the end cap prior to performing the operation of filling the pen by providing a suitable means for actuating the plunger from the top of the end cap. In order to do this I place a square hole to one side of the extreme end of the ink barrel and

insert therein a square pin or presser knob suitably shaped at the top thereof to enable an easy sliding movement to be obtained over the top of same. 30

My end cap or cover is bored right through and in the back end of same I insert a plug consisting of two pieces 35 pinned together, one piece of about the same diameter as the outside diameter of the end piece, and the other about the same diameter as the inside diameter of the end piece. The smaller diameter of the plug is so shaped at its extreme end that it is over half its diameter spiral in shape. When this spiral is turned by means of the piece of larger diameter outside the end cap, it depresses the knob, 40 which is in contact with the presser bar and then by being turned further, releases the presser bar and enables it to return to its normal position. 45

It may be preferable to use a round hole 50 excentrically placed in the extreme end of the ink barrel and a round presser knob, or possibly a pin fitted to knob working in a spiral.

Dated the 7th day of July, 1927.
F. E. DOUBLE.

COMPLETE SPECIFICATION.

Improvements in Fountain Pens.

55 I, FREDERICK ELSEY DOUBLE, (British), of 22, Kilmorey Gardens, St. Margarets, Middlesex, 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:—

60 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.

65 In a prior construction of sac self-filling pen, it has been proposed to collapse the ink sac by means of an external revoluble cap attached to a cam-faced plug disposed within the pen barrel and a co-acting cam-

75 faced plug connected to the upper end of a leaf spring carrying a sac-actuating pressure plate, the forward or lower end of the leaf spring being anchored in the pen barrel.

My invention is characterised by the association with a revoluble external knob or a shank or end cap, or the like, of a cam or cams or cam surface or surfaces whereby longitudinal motion may be imparted to said plunger, and means whereby rotary motion of said plunger is positively prevented. 80

Obviously, the longitudinal motion or displacement of the plunger and means whereby it is permitted longitudinal motion only may be variously effected, and two modes of carrying the 85 90

[Price 1/-]

invention into effect are hereinafter described and illustrated by way of examples only.

In the accompanying sheets of explanatory drawings:—

Figs. 1 to 7, inclusive, are views of a sac self-filling fountain or reservoir pen wherein there is embodied presser-bar actuating mechanism according to one arrangement and construction.

Fig. 1 is a longitudinal section of the pen,

Fig. 2 is a plan of the pen with shank or end cap removed.

Figs. 3 and 4 are views, taken at right angles to each other, and drawn to an enlarged scale as compared with Figs. 1 and 2, of plunger-projecting cams with rotary actuating knob or head-piece, and Fig. 5 is an inverted plan view of Fig. 3.

Figs. 6 and 7 are views, similar to Figs. 3 and 4, of the plunger.

Figs. 8 to 16, inclusive, are views of a sac self-filling fountain or reservoir pen embodying a modified arrangement or construction of presser-bar actuating mechanism.

Fig. 8 is a longitudinal section of the pen.

Fig. 9 is a plan of the pen with shank or end cap removed.

Figs. 10 and 11 are views, taken at right angles to each other, and drawn to an enlarged scale as compared with Figs. 8 and 9 of the shank cap, and Fig. 12 is an inverted plan view of Fig. 10.

Figs. 13 and 14 are views, similar to Figs. 10 and 11, of the plunger.

Figs. 15 and 16 are sections—taken at right angles to each other—showing the construction of the rear or shank end of the pen.

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

Referring first to the pen illustrated in Figs. 1 to 7, inclusive,

a denotes the pen body or barrel, *b* the nib section screwed to the lower end of barrel *a*, *c* the writing nib, *d* the collapsible ink sac, *e* the presser-bar, and *f* the presser-bar operating spring strip; all as customary.

Screwed to the rear or shank end of barrel *a* is a cap *g*, and loosely disposed on the top of the presser-bar actuating strip *f*—the upper end of which projects into a passage *a*¹ formed in pen barrel *a*—and so as to straddle same, is a bifurcated saddle member *h* which constitutes a plunger.

The lower portion of said plunger *h* is of rectangular configuration, and is slidably disposed in barrel passage *a*¹ formed at the upper end of the barrel *a* (but alter-

natively, said passage may be formed in a plug screwed or otherwise suitably positioned in the upper end of the barrel; which passage is of corresponding shape to prevent rotary or revoluble movement of the plunger, whilst permitting longitudinal displacement thereof: the upper portion of said plunger *h* projects into the interior *g*¹ of shank cap *g*.

Disposed exteriorly of said shank cap *g* is a knob or headpiece *j* whereto is fixedly attached a depending rod or stem *k*; the lower end whereof carries a pair of cams or cam faces *l* which are housed within said interior *g*¹ of shank cap *g* in proximity with the upper portion of plunger *h*.

Normally, the upper portion of said plunger *h* lies in the space *l*¹ between said cams or cam faces *l*.

When it is desired to fill sac *d*, the nib end of the pen is sealed in ink and the knob *j* is revolved, said cams *l* thereupon bear on the top of plunger *h* and project it—against the spring resistance of the presser-bar actuating strip *f*, which is connected to the presser-bar at *m* and the lower end whereof rests at *b*¹ on the nib section *b*—so that the consequent deflection of said spring strip *f*, acting on the presser-bar *e*, causes the collapse or contraction of the sac *d* (the lower end whereof is anchored around the neck *b*² of the section *b*) to expel residue ink, if any, contained in the sac: On the continued rotary motion of the revoluble knob *j* said plunger *h* is released by the cams *l*, and spring strip *f* is permitted to return to its normal non-flexed condition, when sac *d* is permitted to expand, so that a charge of ink is induced therein.

Thus the expulsion of residue ink from sac *d* and the induction of a new charge therein is effected by turning the knob *j* clockwise through one half of a revolution, and the audible click attendant on the cams clearing the plunger *h* will indicate that induction has taken place.

Obviously a single cam or cam face may be employed to effect collapse and permit of self-expansion of the sac, if desired.

Referring now to the modification illustrated in Figs. 8 to 16, inclusive, there is fixedly secured in the rear or shank end of the pen body or barrel *a*, a plug piece *n* (but, alternatively, a plug may be made integral with the barrel, or may be secured by friction or in other convenient manner) provided with a reduced neck portion *n*¹ which projects beyond the end of the barrel and whereon the shank cap *g* is screwed.

Cut or formed in the interior wall of cap *g* is a cam surface *l*³, and formed in

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the plug n is a passage n^2 into which the upper end of the presser-bar actuating strip f extends. Loosely disposed on the top of said strip is a plunger h which projects through plug passage n^2 and the upper inclined face h^1 whereof is normally maintained in engagement with the corresponding inclined cam-surface l^3 of the cap.

10 Secured to the cap g is a stop pin o which is adapted to operate in a slotted or cut-away part n^3 of the neck portion n^1 of the plug, and so limit or restrict the rotary travel of the cap.

15 When it is desired to fill the sac, the nib end of the pen is immersed in ink, and the cap g is revolved until pin o reaches the end of slot n^3 , when further rotation of cap g is prevented. During this rotary motion of the cap, the inclined cam surface l^3 operates on the cam face h^1 of the plunger h and projects the plunger against the spring resistance of the presser-bar actuating strip f , so that the consequential deflection of said spring strip f , acting on the presser-bar e , causes collapse of the sac d to expel residue ink, if any, contained in the sac: On the cap being revolved in the reverse direction, the cam-face h^1 of the plunger—under the influence of spring strip f —rides up the cam-surface of the cap and the strip returns to its normal non-flexed condition, when 30 sac d is permitted to expand, so that a charge of ink is induced therein.

It will be understood that the external contour of the plungers before described, and the configurations of passages a^1 and 40 n^2 in which they operate may vary as desired, provided rotational movement of the plunger is prevented.

In some cases, the presser-bars e before described may be omitted, the spring strips f being arranged to act directly on the sacs d .

Having now particularly described and ascertained the nature of my said inven-

tion and in what manner the same is to be performed, I declare that what I claim is:— 50

1. A sac self-filling fountain or reservoir pen 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, characterised by the association with a revoluble external knob, or a shank or end cap, or the like, of a cam or cams or cam surface or surfaces whereby longitudinal motion may be imparted to said plunger, and means whereby rotary motion of said plunger is positively prevented. 55

2. An embodiment of the subject matter of the preceding claim, in which embodiment cam or cams or cam surface or surfaces is or are attached to or formed on a rotary knob, or the like, and the plunger is longitudinally movable—but not revoluble—in a passage provided at the rear or shank end of the pen body or barrel. 60

3. An embodiment of the subject matter of Claim 1, in which embodiment a cam surface or surfaces is or are formed on a shank cap whose rotary motion is limited by means of a stop, or the like, and the plunger is longitudinally movable—but not revoluble—in a passage provided at the rear or shank end of the pen body or barrel. 65

4. In a fountain or reservoir pen of the type provided with an end plunger for the purpose of bending a spring to cause collapse of the sac in the ink charging operation, means whereby said plunger may be actuated and positively prevented from rotary motion substantially as hereinbefore described, and illustrated in Figs. 1 to 7, inclusive, or Figs. 8 to 16, inclusive, of the accompanying drawings. 70

Dated this 7th day of April, 1928.

JOHN HINDLEY WALKER,
139, Dale Street, Liverpool,
Applicant's Patent Agent. 75

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

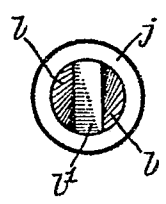
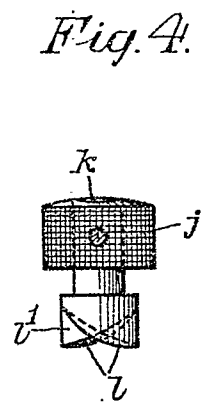
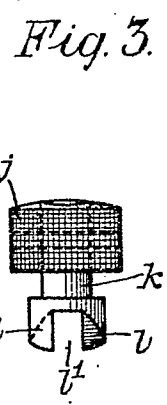
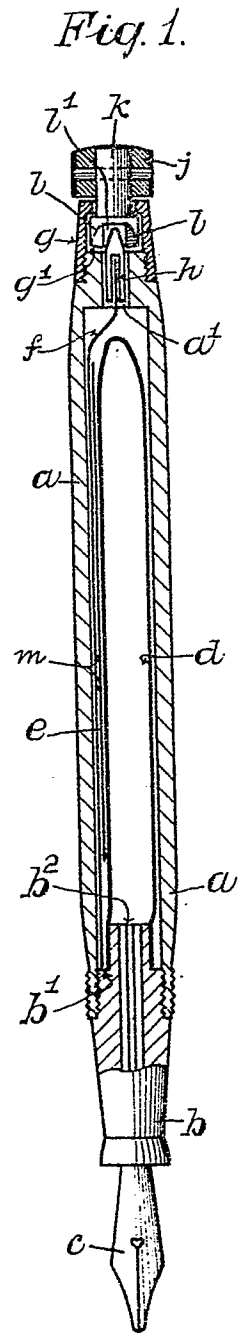


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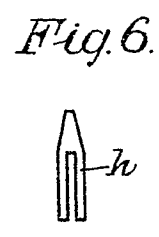


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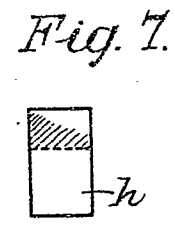


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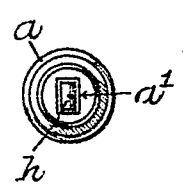


Fig. 2.

Fig. 8.

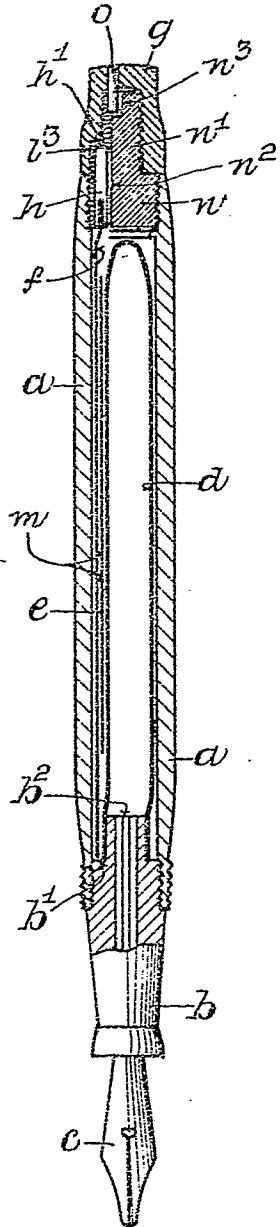


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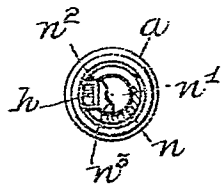


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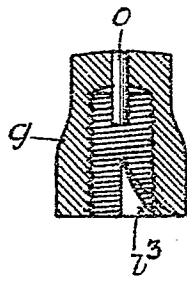


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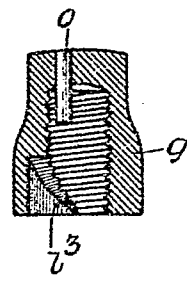


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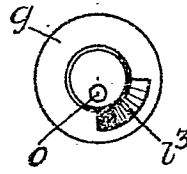


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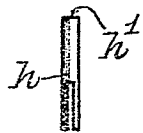


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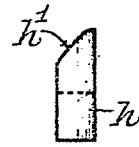


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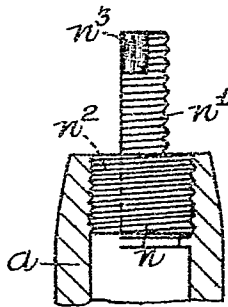


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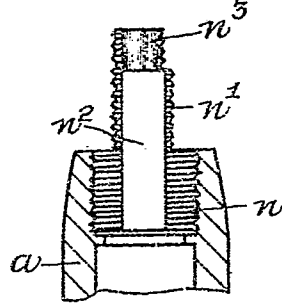


Fig. 1.

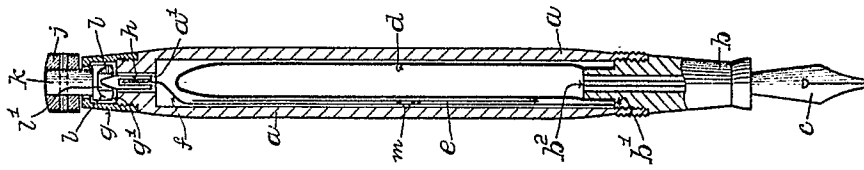


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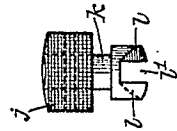


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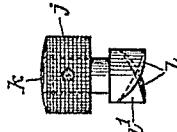


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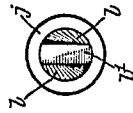


Fig. 7.



Fig. 6.



Fig. 2.

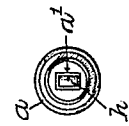


Fig. 8.

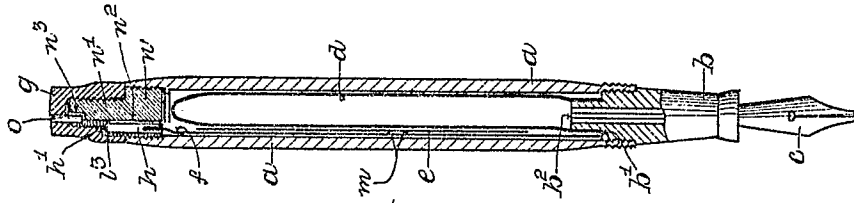


Fig. 10.

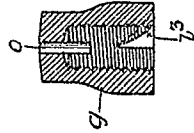


Fig. 11.

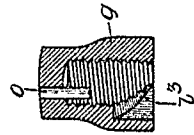


Fig. 12.

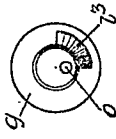


Fig. 13.



Fig. 14.



Fig. 16.

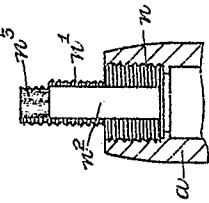


Fig. 15.

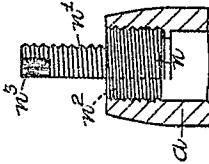
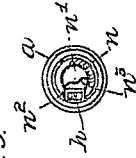


Fig. 9.



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