PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or relating to Fountain Pens

We, MABIE TODD & COMPANY LIMITED, (a company organised under the laws of Great Britain and Northern Ireland), of 41, Park Street, Mayfair, London, W.1, and FREDERICK GEORGE HEARD (British Nationality), of 4, Oakington Avenue, Harrow, 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:—

This invention relates to fountain pens of the type wherein the writing point is a rotary ball of hardened steel, or other suitable material, which is normally—i.e. when not in use—housed in a surrounding body or casing, is projected for use against spring resistance, and, after use, is permitted to retire under the spring's reaction; such movements of the ball point being controlled by a knob situated at the rear of the pen and adapted for actuation by a thumb or finger of one hand.

The present invention aims to produce a writing instrument of the type referred to, which embodies simple and positive means whereby the ball point is projected into and retracted out of writing position; said means comprising a lateral pin, or its equivalent, disposed between two opposed series or rings of teeth formed or provided within the pen body, and said pin being adapted, by movement of a spring-influenced actuating knob, to be positioned, through guidance by the sloping sides of said teeth, within one of a number of relatively deep slots formed between certain of the teeth of one of said series of teeth, thus to locate the ball point in retracted position, or within one of a number of relatively shallow spaces formed between said teeth to locate the ball point in writing position; the positioning of said pin being achieved by movement of the pin or/and of the series of teeth.

In one arrangement, said series of teeth are formed in the opposed ends of two aligned sleeves affixed within the pen body, said engaging pin is provided on a stem or plunger of said actuating knob, and the stem extends through said sleeves, being revoluble and longitudinally reciprocable therein. Alternatively, said aligned sleeves may be revoluble and said pin-carrying stem or plunger may be constrained to reciprocal movement only i.e. the teeth of the two series of teeth will revolve into required position by the engagement of the pin of the plunger on their inclined sides.

In carrying out our invention, according to one construction, we provide a body or casing in which is located a, preferably cylindrical, ink or dye reservoir or container, the upper end whereof is sealed by a removable and replaceable closure plug or cap; whilst, extending from and communicating with the lower end of the ink container, is a fine or capillary tube carrying a ball point. Disposed around said ink supply tube to the ball point, and being positioned between the lower end of said ink container and a stop portion of or in said casing, is a helically-coiled compression spring; thus the unit comprising said ink reservoir, the ink feed, and ball point carrier, is normally maintained in a retracted position with the writing point housed in the casing under the influence of said spring, and, when said unit is projected to expose the ball point in writing position, such movement is effected against the resistance of said spring.

Disposed toward the rear or upper portion of said casing is a carrier-sleeve the upper end of which is detachably secured, such as by screwing, to the body or casing, and wherethrough revolubly extends a reciprocable stem or plunger the lower or inner end whereof is in continuous contact with the top of the ink reservoir, whilst its upper end, which projects beyond the top of the casing, is furnished with a knob. Transversely secured on said stem is a pin or rod.

Spacedly disposed between said stem and carrier-sleeve, and being secured in any convenient manner, to said sleeve, are spacedly disposed upper and lower sleeve-like members provided at their opposed ends with co-operating ratchet-like teeth in one or other of which projecting extremities of said pin engage, the arrangement being such that on downward pressure and then slight easement of such pressure on the knob, the ball point is first projected and then locked in writing position, and on succeeding downward pressure on and easement of the knob the ball is permitted to recede into the body. In each longitudinal stroke of said knob-stem a rotary step-by-step motion in the same direction is imparted to it by reason of the engagement of said pin's extremities with the sloping sides of said teeth.

We will further describe our invention with the aid of the accompanying sheet of explanatory drawings which illustrate, by way of example and not of limitation, one mode of embodying same.

In said drawings:—

Fig. 1 is an elevation of the pen with the ball point in projected position for writing; Fig. 2 is a section showing the ball point in retracted position within the pen body; Fig. 3 is a similar view showing the ball point projected into writing position; and Fig. 4 is a sectional fragment of Fig. 3, drawn to an enlarged scale.

Figs. 5 and 6 are fragments drawn to a further enlarged scale, and showing the means for effecting projection of the ball point.

1, 1^a indicates a metal body or casing the lower portion 1^a whereof is of inwardly tapering configuration, and within said portion 1^a of the casing there is formed an annular stop ledge 2. 3 denotes a cylindrical ink reservoir, the upper end whereof is provided with a closure (removable for filling purposes) cap 4. To the lower end of the reservoir is connected an ink supply tube 5 whereto —at 8—a ball point carrier 6 is screwed: 7 denotes the ball writing point.

A helically coiled spring 9 is disposed around said ink supply tube 5 and confined between the casing stop ledge 2 and the lower end of the ink container 3. Screwed—so as to be detachable—to the upper end of the casing 1 is a carrier sleeve 10 provided with a flange 10^a which sits on the upper end of casing 1; and slidably and revolubly extending through said sleeve 10 is a reciprocable—i.e. longitudinally movable—stem or plunger 11 provided with a knob 12.

A pin 13 diametrically extends through said stem 11, so that its ends project therefrom.

Pinned or otherwise secured within said sleeve 10 are spacedly and alignedly disposed sleeves 14, 15 in which are cut opposed series of ratchet-like teeth 16, 17, respectively, so arranged that they are, as shown, off-set by approximately half a pitch in relation to each other.

Provided between each succeeding pair of teeth 16 of upper sleeve 14 are vertical slots 18. The projecting ends of pin 13 are continuously urged away from teeth 17.

Assuming said pen is not being used, and each projecting end of pin 13 is lying under the influence of spring 9—via the upper end of ink reservoir 3 which bears continuously on the lower end of the stem, and may if desired be secured thereto—in the upper end of a slot 18, so that its writing end is housed in the front end 1^a of casing 1, (Figs. 2 and 5) and it be desired to use the pen, knob 12 is thumb-pressed down against the resistance of and compressing spring 9, carrying with it stem 11 working through said sleeves. In its downward travel, each laterally protruding end of pin 13 engages and moves down an inclined side of one of the teeth 17 of the lower sleeve 15 then in its path (the knob stem revolving a step); then, when pressure on knob 12 is eased, pin 13 rises under the spring's reaction, engages and moves up the inclined side of the tooth of the upper series of teeth 16 then in its path, and for the time being remains in the shallow space between said tooth and the next adjacent tooth, thus leaving the ball point exposed for use (Figs. 1, 3, 4, 6). To re-house the ball point, knob 12 is depressed and pin 13 moves down the inclined side of the next succeeding tooth of the lower series of teeth 17 in its path, the pressure is eased and pin 13 in its consequential upward movement is guided by the inclined side of the next succeeding tooth 16 of upper sleeve 14 into the slot 18 then in its path, when the writing unit (i.e. ink reservoir 3, supply tubes 5, 6, and ball point 7) is carried upward by spring 9, so that the ball point 7 is re-housed in casing 1.

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

1. In a fountain pen of the type referred to, means whereby the ball point is projected into and retracted out of writing position, comprising a lateral pin, or its equivalent, disposed between two opposed series or rings of teeth formed or provided within the pen body,

and said pin being adapted, by movement of a spring influenced actuating knob, to be positioned, through guidance by the sloping sides of said teeth, within one of a number of relatively deep slots formed between certain of the teeth of one of said series of teeth, thus to locate the ball point in retracted position, or within one of a number of relatively shallow spaces formed between said teeth to locate the ball point in writing position; the positioning of said pin being achieved by movement of the pin or movement also of the series of teeth.

2. An embodiment of the ball point fountain pen claimed in claim 1, in which said series of teeth are formed in the opposed ends of two aligned sleeves affixed within the pen body, said engaging pin is provided on a stem or plunger of said actuating knob, and the stem extends through said sleeves, being revoluble and longitudinally reciprocable therein.

3. A modification of the ball point fountain pen claimed in claim 2, in which said aligned sleeves are revoluble and said stem or plunger is constrained to reciprocal movement only.

4. A ball point fountain pen as claimed in any one of the preceding claims, in which said teeth of the two opposed series of teeth are relatively off-set and said slots are formed between succeeding pairs of teeth of one of said series of teeth.

5. A ball point fountain pen as claimed in claim 2, in which said aligned sleeve members are spacedly secured within a carrier-sleeve which is detachably located within the pen body or casing.

6. A ball point fountain pen substantially as hereinbefore described and illustrated in the accompanying drawings.

Dated this 1st day of May, 1947.

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Fig.1.

Fig.2.

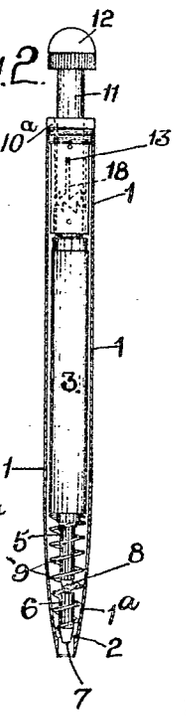


Fig.3.

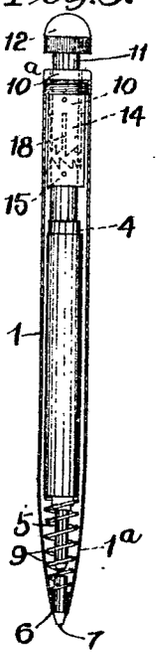


Fig.5.

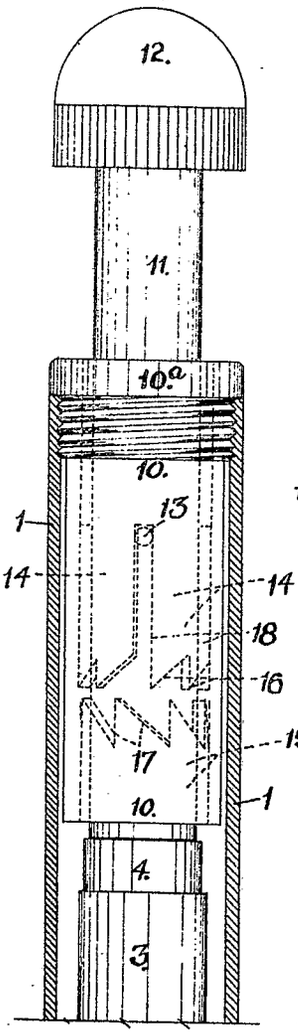


Fig.6.

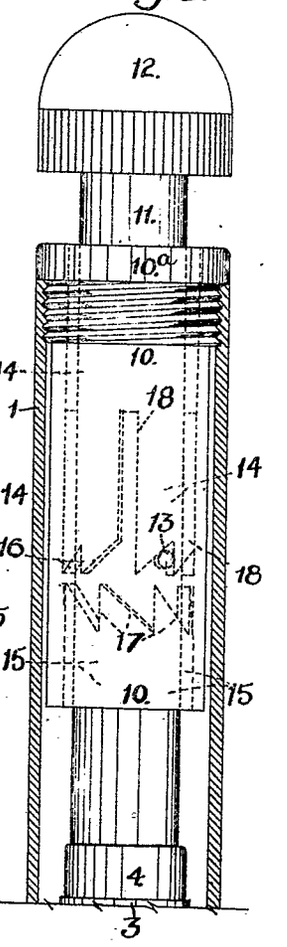
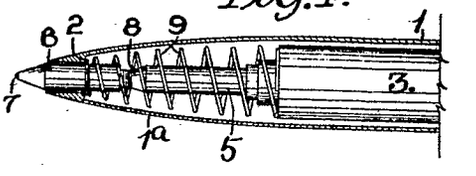


Fig.4.



H.M.S.O.(Ty.P.)