

RESERVE

# PATENT SPECIFICATION

595,572

No. 17290/45.



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## PROVISIONAL SPECIFICATION

### Improvements in and relating to Self-filling Fountain Pens

We, ERIC ERNEST SAMUEL WADE and CHARLESWORTH LIVSEY, both British Subjects and both of The Lang Pen Company Limited, 13, Hope Street, 5 Liverpool 1, in the County of Lancaster, do hereby declare the nature of this invention to be as follows:—

This invention relates to self-filling fountain pens with more especial refer- 10 ence to those in which, during the filling operation, compression of a rubber sac or reservoir is effected by the lateral pressure of a flexible metal strip which can be bowed or buckled by endwise pressure. 15 Customarily, the endwise pressure is applied by manipulation of a small plunger in the rear end of the pen barrel, the projecting portion of the plunger being normally covered by a small 20 removable cap, which requires to be removed and is liable to be mislaid in the filling operation. Various proposals have been made to eliminate this remov- 25 able end cap, for example by screw-threading the projecting portion of the plunger and mounting the cap thereon so that it is unscrewed rearwardly but not removed preparatory to depression of the 30 plunger during a filling operation, and the present invention has for its object to provide an improved mechanism for actuating the spring presser bar to fill the pen which can be more cheaply manu- 35 factured, readily assembled and is convenient in use.

In accordance with the present inven- tion mechanism for actuating the spring presser bar comprises a cylindrical plug or ferrule adapted to be screwed into the 40 rear end of the pen barrel, a sleeve plunger or nut slidably in said ferrule and restrained against rotation therein by a member or members engaging a longi- tudinal slot or slots in the ferrule, and a 45 screwed shank in said sleeve plunger or nut mounting at its rear end a finger-piece by means of which the shank can be unscrewed rearwardly of the sleeve

preparatory to depression of the latter by the finger-piece to bow the spring presser 50 bar for the filling operation.

The members preventing relative rotation between the ferrule and the sleeve plunger, both of which are pre- 55 ferably of metal, are conveniently lugs projecting outwardly from the plunger into longitudinal slots formed for the purpose in the front end of the cylin- 60 drical wall of the ferrule, or the converse arrangement can be employed, while to remove any likelihood of the screwed shank or bolt being unscrewed so far that it becomes detached from the sleeve, a stop is provided, suitably in the form of 65 a washer rivetted to the inner end of the screwed shank and adapted to abut with a shoulder at the rear end of the sleeve.

The sleeve or plunger extends for- 70 wardly of the shoulder sufficiently to accommodate the shank when screwed home by the finger-piece, and its for- 75 ward end from which the lugs project laterally serves to actuate the spring presser bar, appropriately of conven- 80 tional form with a cup-shaped head- piece rivetted to or located on its tip and sliding within the ferrule.

The finger-piece or knob on the rear 85 end of the screwed shank is conveniently a moulding of plastic material having a cylindrical portion telescoping within the ferrule to render the action smooth and impart a pleasing appearance to the rear 90 end of the pen.

By the present invention, improved 85 mechanism for actuating the spring presser bars of self-filling fountain pens is obtained which is cheaply manufactured and readily assembled as a unit for fit- 90 ment to the pen.

Dated this 6th day of July, 1945.

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[Price 1/-]

## COMPLETE SPECIFICATION

## Improvements in and relating to Self-filling Fountain Pens

- We, ERIC ERNEST SAMUEL WADE and CHARLESWORTH LIVSEY, both British Subjects, and both of The Lang Pen Company Limited, 13, Hope Street, 5 Liverpool 1, in the County of Lancaster, 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 10 following statement:—
- This invention relates to self-filling fountain pens in which, during the filling operation, compression of a rubber sac or reservoir is effected by the lateral pressure 15 of a flexible metal strip or spring presser bar which can be bowed or buckled by endwise pressure.
- Customarily, the endwise pressure is applied by manipulation of a small 20 plunger in the rear end of the pen barrel, the projecting portion of the plunger being normally covered by a small removable cap, which requires to be removed and is liable to be mislaid in the filling 25 operation. Various proposals have been made to eliminate this removable end cap, for example by screw-threading the projecting portion of the plunger and mounting the cap thereon so that it is 30 unscrewed rearwardly but not removed preparatory to depression of the plunger during a filling operation, and the present invention has for its object to provide an improved mechanism for actuating 35 the spring presser bar to fill the pen which can be more cheaply manufactured, readily assembled and is convenient in use.
- In accordance with the present invention mechanism for actuating the spring 40 presser bar comprises a cylindrical plug or ferrule adapted to be screwed into the rear end of the pen barrel, a sleeve plunger or nut slidable in said ferrule and 45 restrained against rotation therein by a projection or projections on one of these members engaging a longitudinal slot or slots in the other member and a finger-piece having a shank screwed in said 50 sleeve plunger or nut by means of which the shank can be unscrewed rearwardly of the sleeve plunger preparatory to depression of the latter by the finger-piece to bow the spring presser bar for the filling 55 operation.
- The projections preventing relative rotation between the ferrule and the sleeve plunger, both of which are preferably of metal, are conveniently 60 diametrically opposite lugs projecting outwardly from the plunger into longitudinal slots formed for the purpose in the front end of the cylindrical wall of the ferrule, or the converse arrangement can be employed, while to remove any 65 likelihood of the screwed shank or bolt being unscrewed so far that it becomes detached from the sleeve, a stop is provided, suitably in the form of a washer 70 rivetted to the inner end of the screwed shank and adapted to abut with a shoulder at the inner end of the sleeve.
- As an alternative to the lugs engaging longitudinal slots, relative rotation 75 between the ferrule and the sleeve plunger may be prevented by means of a ball seated in a recess in one of these members from which it projects to ride in a longitudinal slot or groove in the juxtaposed face of the other member. 80
- The sleeve or plunger extends forwardly of the shoulder sufficiently to accommodate the shank when screwed home by the finger-piece, and its forward end from which the lugs project laterally 85 serves to actuate the spring presser bar, appropriately of conventional form with a cup-shaped head-piece rivetted to or located on its tip and sliding within the ferrule. 90
- The finger-piece or knob on the rear end of the screwed shank is conveniently a moulding of plastic material having a cylindrical portion telescoping within the ferrule to render the action smooth 95 and impart a pleasing appearance to the rear end of the pen.
- The invention will be further described with reference to the accompanying 100 drawings which illustrate by way of example two embodiments of the improved actuating mechanism for sac self-filling fountain pens and in which:—
- Figure 1 is a longitudinal section of a sac self-filling pen equipped with the preferred 105 embodiment of actuating mechanism; Fig. 2 being an exploded view showing the parts of such mechanism; while Fig. 3 is a longitudinal section of the 110 rear end of a pen furnished with a modified form where a ball riding in a guide-way prevents relative rotation between the ferrule and the sleeve plunger.
- Referring now to the drawings, but 115 first more particularly to Figs. 1 and 2, 1 generally designates the body or barrel of the pen shown equipped at its front end with a conventional section 2 carrying the nib 3. 120
- Within the generally cylindrical portion of the body or barrel 1 an ink reservoir or sac 4 is mounted on the rear end of the nib section 2, and compression of

the sac preparatory to filling the pen is effected by a spring presser bar 5, pressure on the rear end 6 of which causes the bar to buckle and produce lateral movement of a rigid bar 7 mounted in any appropriate or conventional manner, usually by a rivet, on the central portion of the spring presser bar 5.

The improved actuating mechanism for depressing the rear end 6 of the spring presser bar 5 in this embodiment comprises a cylindrical plug or ferrule 10 which is externally screw-threaded at 11 to engage with a corresponding thread 12 formed for the purpose in the open rear end of the pen body or barrel 1.

Slidable within the ferrule 10 is a sleeve plunger or nut 13 which is restrained against rotation in relation to the ferrule by means of laterally projecting lugs 14 and 15 on the former engaging respectively in diametrically opposite longitudinal slots 16 and 17 formed in the lower end of the ferrule.

The sleeve plunger or nut 13 is furnished at its upper rear end with an internal thread 18 taking a screw-threaded shank 19 on a headed member 20 which at its rear end mounts a finger-piece 21, the arrangement being such that rotation of the finger-piece unscrews the threaded shank 19 to the position shown in Fig. 1 when the parts are ready for the filling operation which is effected by merely pressing and releasing the finger-piece 21, while the nib 3 of the pen is submerged in the ink, there being no loose or removable parts.

22 is a washer or stop collar carried by the lower end of the screw-threaded shank 19 to prevent its being inadvertently withdrawn from the sleeve plunger 13 when the finger-piece is unscrewed and 23 is a cup-shaped piston or headpiece for the rear end 6 of the spring presser bar 5, which piston slides within the tubular front end of the ferrule 10 and is maintained in abutment with the front annular surface of the sleeve plunger by the spring presser bar 5.

With the exception of the finger-piece 21, all the components of the actuating mechanism are preferably made of metal and the finger-piece, advantageously of plastic material, is moulded around the headed portion of the member 20, such finger-piece 21 having a milled ring 24 (Fig. 3) to facilitate manipulation and a shoulder 25 which, when the finger-piece is screwed home after a filling operation, abuts with the end of the body or barrel 1, while a reduced cylindrical portion 26 telescopes within the ferrule.

In the alternative embodiment illustrated in Fig. 3, the plug or ferrule 10,

sleeve plunger 13, threaded shank 19, finger-piece 21 and cup-shaped piston 23 are all similar to those prescribed in the previous embodiment, but in place of the laterally projecting lugs 14 and 15 on the sleeve plunger engaging diametrically opposite slots 16 and 17 respectively in the ferrule, to prevent relative rotation between these components when the threaded member is screwed or unscrewed by the finger-piece 21, a ball 28 is seated in a recess 29 in the outer cylindrical wall of the sleeve plunger 13 and projects from such outer wall into a longitudinal groove 30 in the juxtaposed internal cylindrical surface of the screwed plug or ferrule 10.

In both embodiments the slidable components are assembled in the plug or ferrule by inserting the sleeve plunger in its front end and then screwing into the latter the threaded shank 19 of the headed member 20 before fitting the stop collar 22, whereafter the assembly is screwed as a unit into the rear end of the barrel to facilitate which later operation the ferrule is advantageously formed at its rear end with a circular flange 31 fitting flush in the barrel bore and provided with notches 32 for the engagement of a screw-driver or other fitting tool.

By the present invention, improved mechanism for actuating the spring presser bar of self-filling fountain pens is obtained which is cheaply manufactured and readily assembled as a unit for fitment to the pen.

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. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen comprising a cylindrical plug or ferrule adapted to be screwed into the rear end of the pen barrel, a sleeve plunger or nut slidable in said ferrule and restrained against rotation therein by a projection or projections on one of these members engaging a longitudinal slot or slots in the other member, and a finger-piece having a shank screwed in said sleeve plunger or nut by means of which the shank can be unscrewed rearwardly of the sleeve plunger preparatory to depression of the latter by the finger-piece to bow the spring presser bar for the filling operation.

2. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen according to claim 1 wherein for preventing relative rotation between the ferrule and the sleeve plunger lugs pro-

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ject outwardly from the latter into longitudinal slots in the front end of the cylindrical wall of the ferrule.

3. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen according to either of the preceding claims wherein a washer is rivetted to the inner end of the screwed shank and is adapted to abut with a shoulder at the inner end of the sleeve to prevent inadvertent removal of the shank.

4. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen according to claim 1 wherein relative rotation between the ferrule and the sleeve plunger is prevented by means of a ball seated in a recess in one of these members from which it projects to ride in a longitudinal slot or groove in the juxtaposed face of the other member.

5. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen according to any of the preceding claims wherein the threaded shank is formed on a headed member, around the rear headed end of which the finger-piece

is moulded with a cylindrical portion adapted to telescope within the rear of the ferrule.

6. Mechanism according to any of the preceding claims wherein, with the exception of the finger piece, the parts are of metal and the ferrule is formed with a notched terminal flange for the purpose specified.

7. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen constructed and arranged to operate substantially as described with reference to Figs. 1 and 2 of the accompanying drawings.

8. Mechanism for actuating the spring presser bar in a sac self-filling fountain pen constructed and arranged to operate substantially as described with reference to Fig. 3 of the accompanying drawings.

Dated this 5th day of July, 1946.

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

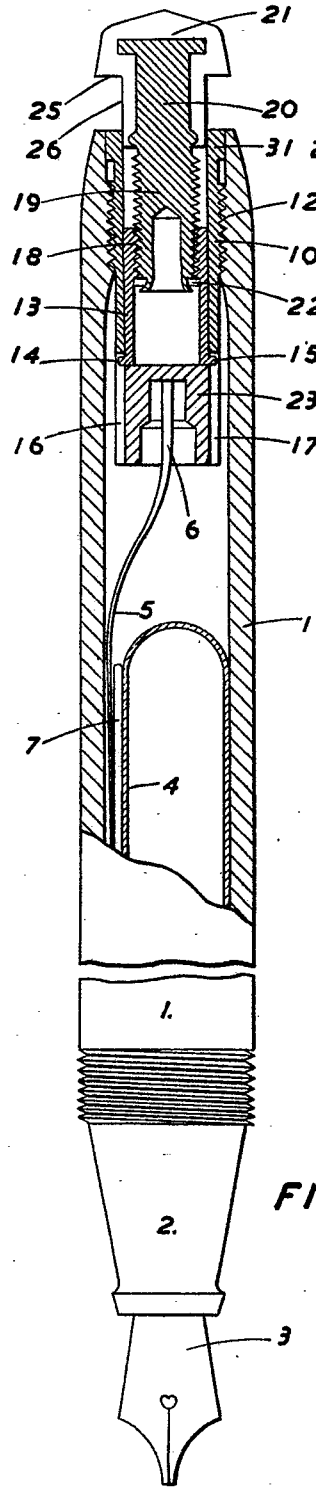


FIG. 1.

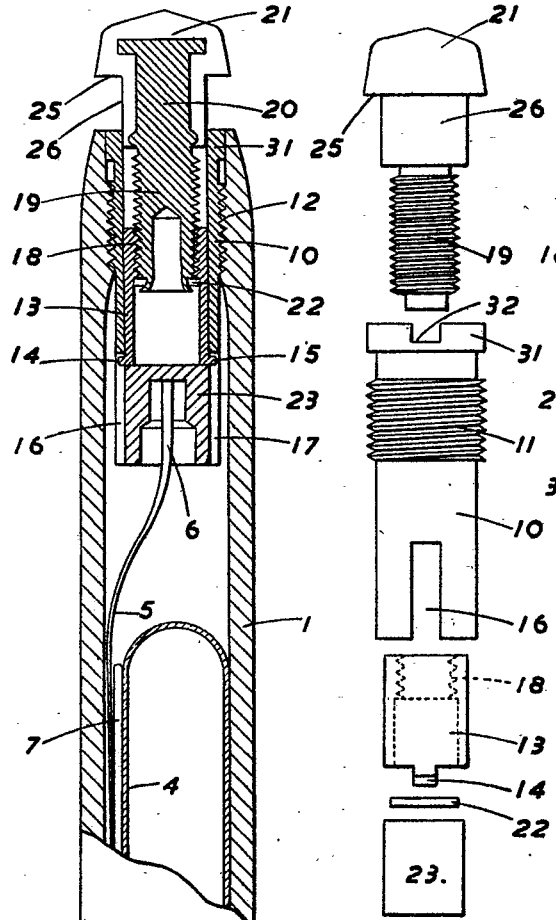


FIG. 2.

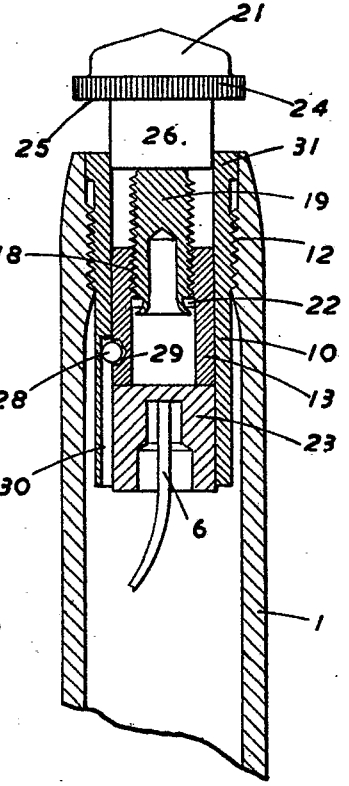


FIG. 3.