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PLUNGER TYPE PEN

Original Filed April 20, 1931

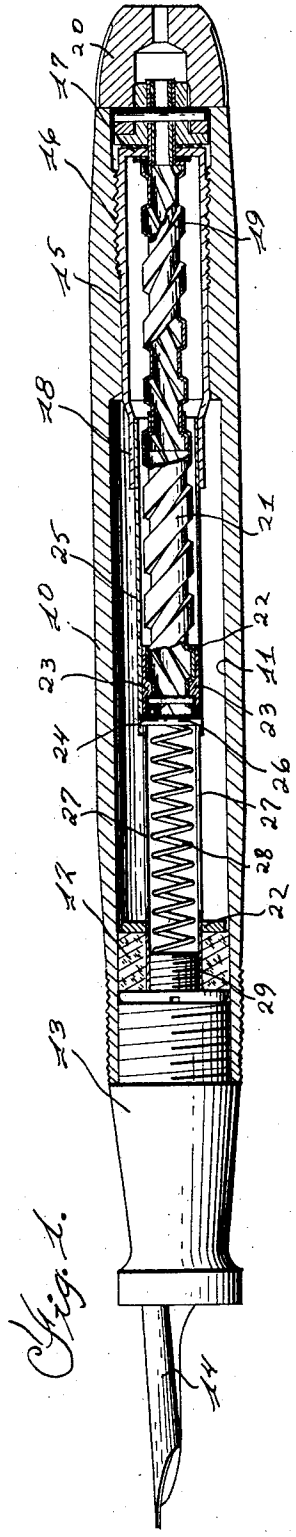

Fig. 1.

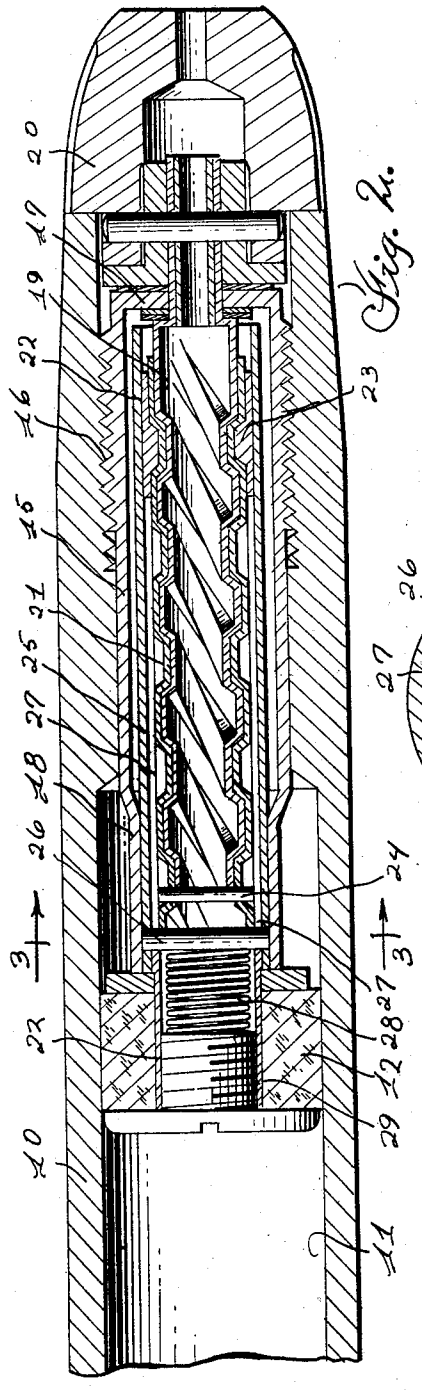

Fig. 2.

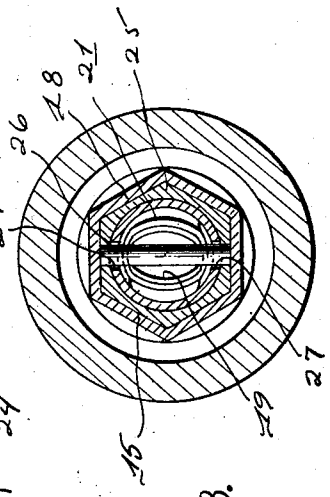

Fig. 3.

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PLUNGER TYPE PEN

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This invention relates to fountain pens and more particularly to an improved construction of sackless or plunger type fountain pens.

One of the primary objects of this invention is to provide a plunger type pen wherein the operating means for the piston or plunger comprises a plurality of telescoping parts which in the retracted position of the piston occupy a minimum amount of space whereupon the capacity of the fountain pen may be accordingly increased.

The several objects, advantages and novel details of construction of the invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein

Figure 1 is a longitudinal sectional elevational view of a fountain pen constructed in accordance with my invention, the cap being removed;

Figure 2 is an enlarged fragmentary longitudinal section of a portion of the pen barrel showing the parts in the position they assume when the piston is fully retracted, and

Figure 3 is a transverse sectional view taken substantially on the plane indicated by line 3—3 in Figure 2.

Referring now more particularly to the drawings wherein like reference characters indicate like parts, there is illustrated a fountain pen barrel 10 of a tubular construction providing a reservoir 11 in which a piston 12 is adapted to reciprocate.

The reference character 13 indicates a nib-end section of the pen which is secured to the end of the barrel 10, this section carrying the usual pen point 14.

The operating mechanism for the plunger, which incidentally is shown in its fully extended position in Figure 1, comprises a sleeve member 15 which is fixed to the barrel 10 by a threaded connection 16, this sleeve member having a closed end portion 17 at one end thereof and a reduced end portion 18 at the other end thereof. The reduced portion 18 is preferably of angular cross sectional shape, usually hexagonal.

Swivelly mounted in the sleeve member 15 is the main or primary threaded member or operating screw 19. For the purpose of lightness this screw member 19 is preferably of hollow construction and is formed with a steep-pitch thread as indicated. As mentioned, the screw member 19 is swivelly mounted in the sleeve member 15 at the closed end 17 thereof and this screw member may be operated by means of a knob or handle 20 fixed to the end thereof.

This screw member 19 is, as clearly illustrated, located within the sleeve member 15 and threadedly engaged therewith and adapted to telescope thereon, is a secondary screw member 21. This member is also of hollow construction and is provided with companion steep-pitch threads.

Threadedly engaged with the secondary screw member 21 and adapted to telescope thereon is a sleeve member 22 which in turn is connected to the piston 12. This sleeve member is provided with thread lugs or projections 23 engaging the threads on the threaded member 21 and in order to prevent a disengagement of these parts the secondary screw member 21 carries a stop-pin 24 arranged transversely of the secondary screw member and adapted to engage the thread lugs 23, in one position of the parts, as shown in Figure 1.

The sleeve member 22 is adapted to telescope within but is non-rotatably connected to a guide sleeve 25 by means of a pin 26 extending transversely of this guide sleeve and through a pair of opposed longitudinally extending slots 27 formed in the sleeve member 22. The sleeve member 22 telescopes within the guide sleeve 25, the relative movement between these sleeve members 22 and 25 being governed by the length of the slots 27, as will be obvious. The cross sectional shape of the guide sleeve 25 is the same as the cross sectional shape of the reduced portion 18 so that the guide sleeve 25 may telescope within the sleeve member 15 but is non-rotatably connected thereto. Therefore, guide sleeve 25 and sleeve 22 may partake of longitudinal movement within the barrel but are prevented from rotating as will be apparent.

A spring 28 is arranged within the sleeve 22 and bears on the one hand against the pin

26 and on the other hand against the element 29 forming a portion of the piston structure.

The spring 28 normally urges the sleeve 22 toward the left as viewed in Figure 1 so as to cause sufficient friction between the stop-pin 24 and the lugs 23 to prevent relative rotation between the secondary screw member 21 and the sleeve 22 which rotation would cause a telescoping movement of these parts.

Accordingly with the parts in the position shown in Figure 1, the knob 20 is rotated, preferably in a clockwise direction, and this causes a rotation of the primary screw member 19 which because of its threaded engagement with the secondary screw member 21 causes the secondary screw member 21 to ride up on the primary screw member 19 until the stop-pin 24 engages the free end of primary screw member 19, this position of the parts being shown in Figure 2. It is understood that the friction between the stop-pin 24 and the lugs 23 on sleeve 22 prevents relative rotation between these parts and the sleeves 25 and 22 are prevented from rotating because of the engagement of the reduced end 18 with the guide sleeve 25. During this movement the guide sleeve 25 telescopes within sleeve member 15. When the primary and secondary screw members 19 and 21 have completely telescoped, these two parts then turn as a unit and this overcomes the friction between the pin 24 and lugs 23 exerted by the spring 28 so that the sleeve 22 then telescopes onto the secondary screw member 21 until the pin 26 engages the left hand end of the slots 27. This is the completely retracted position of the piston 12 and the position of the parts illustrated in Figure 2.

The forward propulsion of the piston is accomplished by a counter-clockwise rotation of the knob 20. The first movement is between the sleeve 22 and the secondary screw member 21, the secondary and primary screw members rotating as a unit to cause the sleeve member to ride down along the secondary screw member to substantially the position of these parts illustrated in Figure 1, this movement being urged by the pressure exerted by the spring 28. This continues until the lugs 23 engage the pin 24 and the pin 26 engages the right hand end of the slots 27. This prevents further rotation of the secondary screw member 21 so that the continued counter-clockwise rotation of the knob 20 causes the secondary screw member to ride off the primary screw member until these parts assume the position illustrated in Figure 1.

From the foregoing it will be apparent that by the complete telescoping of the several operating parts of the piston, these operating parts may be reduced so as to require a minimum amount of space thereby providing means for reciprocating the piston a greater distance and accordingly increasing the capacity of the pen.

While an embodiment of the invention has been described and illustrated herein somewhat in detail it will be readily apparent that various modifications may be resorted to without departing from the spirit and scope of this invention and to this end reservation is made to make such changes as may come within the purview of the accompanying claims.

What I claim as my invention is:

1. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a pair of telescoping interconnected screw members, and a telescoping non-rotatable connection between one of said screw members and said piston.

2. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, an operating handle swivelly mounted in said barrel, and three threadedly interconnected telescoping members connecting said piston and said operating member whereby said piston may be reciprocated in said reservoir upon rotation of said operating handle.

3. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a pair of interconnected telescoping screw members, a member connected to said piston, and a telescoping non-rotatable connection between said last mentioned member and one of said screw members.

4. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a pair of interconnected telescoping screw members, a member connected to said piston, and a telescoping non-rotatable connection between said last mentioned member and one of said screw members, said connection including means normally preventing relative telescopic movement between said last member and the screw member connected therewith in one direction of movement of the parts.

5. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a pair of telescoping screw members, a sleeve member connected to the piston, a threaded telescoping connection between said sleeve member and one of said screw members, and means to prevent relative movement between said sleeve member and screw member during the relative telescoping movement of said screw members.

6. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a main screw member rotatably mounted in said barrel, a second screw member adapted to telescope on said main screw member, a sleeve member connected to said piston and threadedly connected to said

second screw member for telescopic engagement therewith, said sleeve member being non-rotatably mounted, and means for tensioning the connection between said sleeve member and second screw member.

7. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a screw member swivelly mounted in said barrel, a second screw member threadedly connected thereto and adapted to telescope thereon, a sleeve member connected to said piston, said sleeve member being threadedly connected to said second screw member and adapted to telescope thereon, and means for mounting said sleeve member for axial but non-rotative movement.

8. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a sleeve fixed to said barrel, a main screw member mounted in said sleeve, a a second screw member having a threaded telescoping engagement with said main screw member, a guide sleeve having a sliding but non-rotative connection with said first mentioned sleeve, a hollow piston rod connected to said piston and slidably but non-rotatably connected to said guide sleeve, a threaded telescopic connection between said piston rod and said second screw member, and means for tensioning said threaded connection.

9. In a fountain pen, a barrel presenting a tubular reservoir, a piston reciprocable in said reservoir, a pair of interconnected telescoping screw members, a piston rod, a threaded telescoping connection between said piston rod and one of said screw members, and a spring for tensioning said connection, for the purpose set forth.

10. In a piston type fountain pen, a barrel presenting a reservoir, a piston reciprocable in said reservoir, a main screw member, a second screw member telescoping thereon, a sleeve member telescoping on said second screw member and threadedly engaging the same, means for swivelly mounting said screw member for rotative movement only, means for mounting said sleeve member for axial movement only, and means for tensioning the threaded connection between said second screw member and said sleeve member, as and for the purpose set forth.

In testimony whereof I affix my signature.

GERALD L. BASSETT.