July 18, 1933. | T. KOVÀCS | 1,918,404

FOUNTAIN PEN

Filed May 7, 1932

Fig. 2

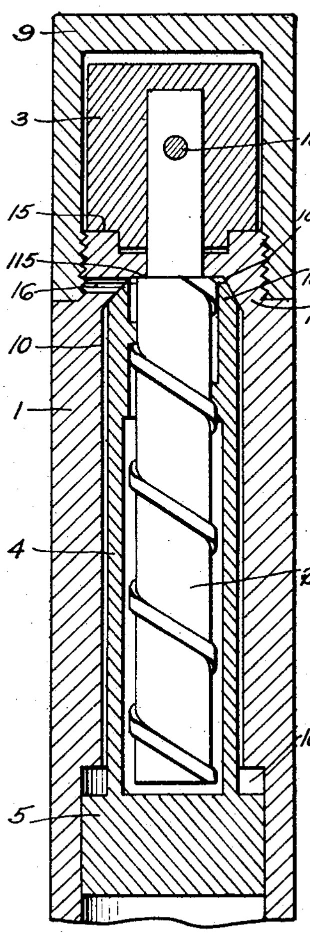
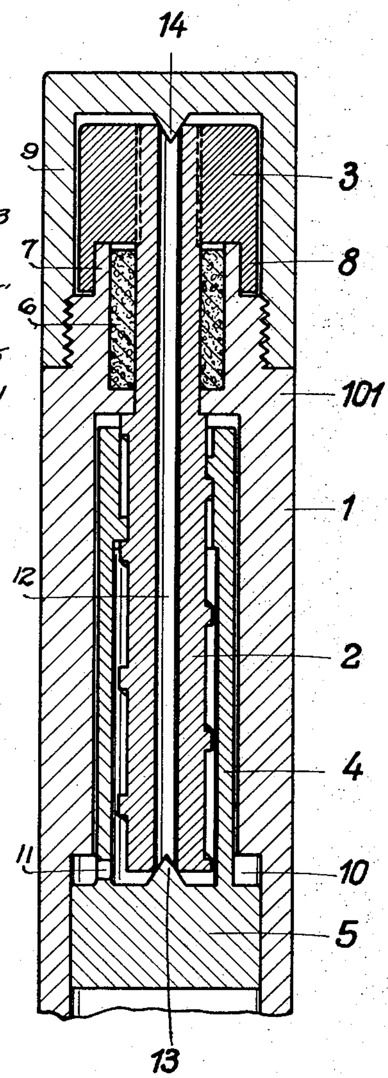


Fig. 1



Inventor:
Theodor Kovàcs
By [signature]
Attorney.

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UNITED STATES PATENT OFFICE

THEODOR KOVÀCS, OF BERLIN-SCHONEBERG, GERMANY

FOUNTAIN PEN

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My invention relates to fountain pens of the type in which the ink is drawn in by means of a plunger which is moved up and down by means of a screw drive; one element of this screw drive is fast with the plunger so that it partakes of the up and down motion thereof and is non-rotatable, whereas the other element is fast with the barrel and can only rotate but cannot move up and down.

My invention relates more particularly to fountain pens of the kind referred to, in which by means of a packing, which tightens the rotatable element against the bottom of the container, any ink which may leak past the plunger to the space beyond it is prevented from running out.

In such fountain pens the downward movement of the plunger may easily give rise to a vacuum above the plunger which draws the ink into this space.

It is an object of my invention to prevent any ink which may have passed into the space above the plunger from running out and also to prevent a vacuum being produced above the plunger even when packing is used.

A further object of my invention is to prevent unintentional movement of the plunger, due to an accidental movement of the handle.

Other objects of the invention will be made clear from the following description:—

According to the invention the space between the plunger and the bottom of the fountain pen barrel communicates by a channel with the outside, and means are provided to close this channel when the fountain pen has been filled.

When there is a packing between the element of the drive which is rotatable but not movable longitudinally and the upper end of the barrel, the invention is preferably carried into effect by providing the said element of the drive with an air channel terminating at one end in the space above the plunger and at the other end beyond the packing at the outside, the channel being provided with closing means.

In one constructional form of the invention, the plunger rod is hollow and provided with a female thread, while the screw spindle is atttached to the rotating knob and has a hole passing through its entire length.

In the preferred embodiment of the invention, the outer end of the air channel is closed by a cap screwed on to the top of the barrel, which at the same time protects the rotating knob from unintentional rotation; the inner end of the air channel may be closed by the plunger itself or by a projection on the plunger.

The drawing illustrates as embodiments of the invention the top ends of two fountain pens constructed in accordance with the invention.

In the drawing, Figure 1 is a section through the top of a fountain pen with packing, and Figure 2 is a section through the top of a fountain pen without packing.

Similar parts are indicated by the same reference numbers.

In Figure 1, 1 is the top end of a fountain pen, 101 is its end. 2 is a spindle provided with a coarse male thread and passing rotatably through the barrel end 101. At its outer end is firmly fixed a knob 3 for rotating it. An annular surface of the knob and an annular surface of the spindle bear on corresponding annular surfaces of the barrel end and thereby prevent longitudinal movement of the spindle and its knob in either direction. The knob 3 has a cylindrical projection 8 which embraces a corresponding cylindrical projection 7 of the barrel end 101 whereby the length of the knob is increased and it is made easier to grasp without increasing the overall length of the fountain pen. 4 is the hollow rod of the suction plunger 5; it is provided with a female thread fitting the male thread of the spindle 2. 6 is an air tight packing between the spindle 2 and the barrel end 101. 9 is a cap which is placed over the knob 3 and is detachably screwed on to the barrel end 101.

Through the whole length of the spindle 2 there is a hole 12 and the space 10 above the plunger is connected with the hole 12 by a hole 11 in the plunger rod 4. The plunger 5 has a projection 13 which closes the inner end of the channel 12 when the plunger is drawn up to the end of its movement and the

cap 9 has a projection 14 which closes the outer end of the channel 12 when the cap is screwed on tightly.

In Figure 2 the knob 3 is connected to the spindle by a pin 103 and is positioned with one surface 15 against the outer surface of the barrel end 101, while the spindle is located by a shoulder 115 against the inner surface of the barrel end.

The hollow plunger rod ends in a cone 105 and the space 10 above the plunger ends in a hollow cone 105′ fitting the cone 105.

The space 10 communicates with the outside by a hole 16 of which the inner end is in the hollow cone 105′ and the outer end in the thread on which the cap 9 is screwed.

An air channel corresponding to the channel 16 could also pass through the end wall of the barrel instead of through its side wall.

For filling the pen the cap 9 is unscrewed and the plunger is moved in the usual manner by rotation of the knob 3 down and up again; then cap 9 is screwed home.

In the fountain pen according to Figure 1, the projection 13 then closes the inner opening of the channel 12 and the projection 14 the outer opening thereof.

In the fountain pen according to Figure 2, the conical surface 105 closes the inner opening of the channel 16 and the cap 9 closes its outer opening.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

In the claims affixed to this specification no selection of any particular modification of the invention is intended to the exclusion of other modifications thereof and the right to subsequently make claim to any modification not covered by these claims is expressly reserved.

What I claim is:—

1. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a screw drive to the plunger comprising a rotatable element fixed longitudinally and a longitudinally movable element fixed as regards rotation the barrel being provided with a vent communicating with the space above the plunger; and a removable closure for the vent.

2. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a screw drive to the plunger comprising a rotatable element fixed longitudinally and a longitudinally movable element fixed as regards rotation, the rotatable element being provided with a vent communicating with the space above the plunger; and a removable closure for the vent.

3. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it, the spindle having a central bore communicating with the space above the plunger; and a removable closure for the bore.

4. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it, the spindle having a central bore communicating with the space above the plunger; and a projection on the plunger closing the bore at the top position of the plunger.

5. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it, the spindle having a central bore communicating with the space above the plunger; and a screw cap over the filling mechanism engaging the bore when the cap is screwed home.

6. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it; airtight packing between the spindle and the barrel, the spindle having a central bore communicating with the space above the plunger and extending beyond said packing; and removable closing means for the bore.

7. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it, the barrel being provided at its top with a vent adapted to be closed by the plunger rod in its normal position.

8. In a self-filling fountain pen; a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it, the barrel being provided at its top end with a vent adapted to be closed by the engagement of a conical surface on the top end of the plunger rod with a hollow cone in the bottom of the barrel.

9. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it; a protective cap over the filling mechanism adapted to be screwed on the barrel, said barrel being provided at its top end with a vent adapted to be

closed on its exterior orifice by said cap when in its normal position.

10. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod having a transverse hole near its bottom end; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it, the spindle having a central bore communicating with the space above the plunger; airtight packing between said spindle and the barrel; a projection on the plunger closing the end of said central bore at the top position of the plunger; a knob on the end of the spindle and a screw cap over the filling mechanism having a projection engaging the other end of the bore when the cap is screwed home.

11. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a hollow plunger rod; a screw drive to the plunger comprising a female thread in the hollow of the plunger rod and a spindle with male thread engaging it; an operating knob on the end of the spindle; a protective cap adapted to be screwed over said knob, the barrel being provided at its top end with a vent adapted to be closed on its interior end by the engagement of a conical surface on the top end of the plunger rod with a hollow cone in the end of the barrel, and on its exterior end by said screw cap when in its normal position.

12. In a self-filling fountain pen: a plunger for filling purposes slidable in the barrel; in operative connection with said plunger a screw drive comprising a rotatable element unslidably secured to the barrel; airtight packing between said element and said barrel, said rotatable element being provided with a longitudinal vent communicating with the space above the plunger and extending beyond said packing; and closing means for said vent.

13. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a screw drive in operative connection with the plunger, said screw drive comprising a rotatable element fixed longitudinally and a longitudinally movable element fixed as regards rotation; the barrel being provided with a vent communicating with the space above the plunger; said vent being adapted to be closed by the longitudinally movable element.

14. In a self-filling fountain pen: a plunger slidable in the barrel for filling purposes; a screw drive in operative connection with said plunger; said screw drive having a rotatable element fixed longitudinally; a handle fixedly secured to said rotatable element; and a detachable protecting cap for the handle; the barrel being provided with a vent communicating with the space above the plunger; this vent being adapted to be closed by the protecting cap.

THEODOR KOVÀCS.