

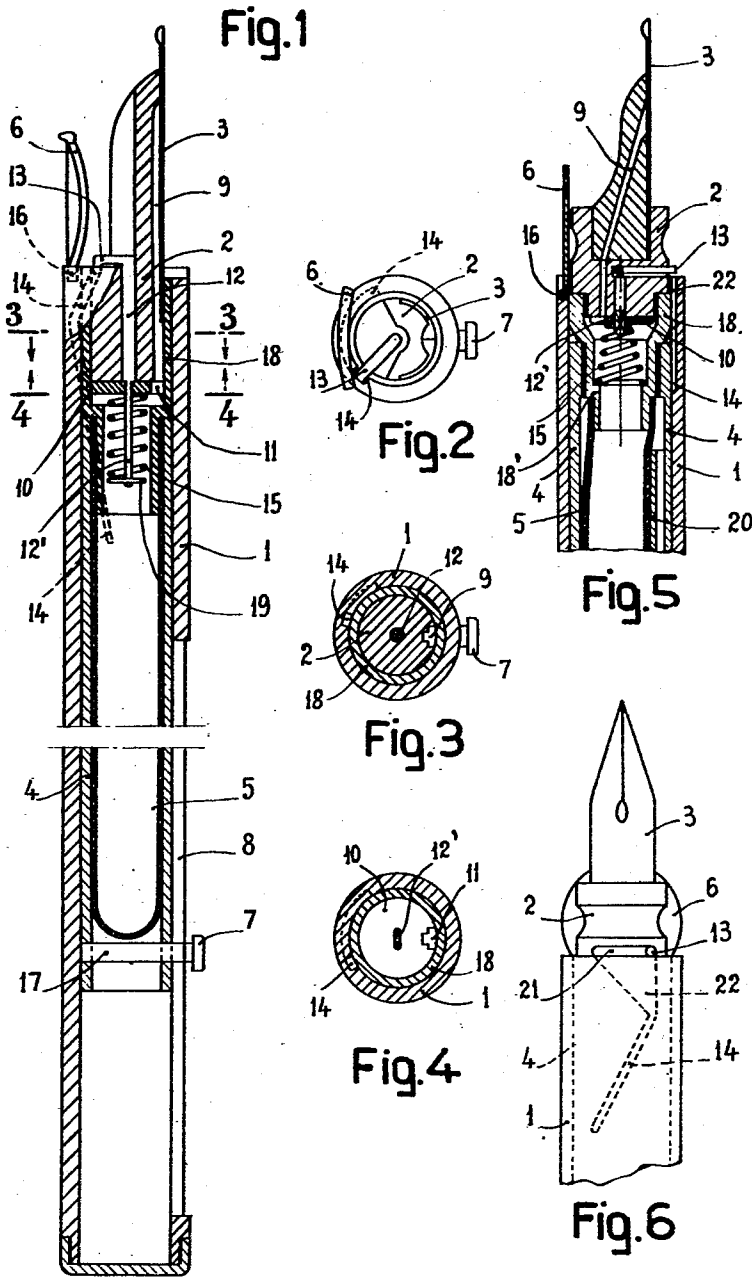
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FOUNTAIN PEN

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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

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The present invention relates to fountain pens, and has for its object to provide a fountain pen embodying means which will, at the time of manipulation of the parts of the pen adjust the nib to a position for writing or to a position where it will be protected, actuate a valve member provided on a part interposed between the ink reservoir and the nib, to provide for supply of ink from the reservoir to the nib of the pen when the nib is in position for writing and effect closing of the valve member when the nib of the pen is in the other position referred to.

In the accompanying drawing which illustrates by way of example an embodiment of the present invention,

Figure 1 is a central longitudinal section of a fountain pen embodying the improvements of the present invention;

Figure 2 is an end view of the same;

Figure 3 is a transverse sectional view on the line 3—3 of Fig. 1 looking in the direction indicated by the arrows;

Figure 4 is a transverse sectional view on line 4—4 of Fig. 1 looking in the direction indicated by the arrows;

Figure 5 is a fragmentary central sectional view showing a modified construction; and

Figure 6 is a side view of the nib end of the pen shown in Fig. 5.

In the drawing the numeral 1 indicates a barrel in which is movably mounted a pen body comprising a sleeve 4 which encloses the ink reservoir 5, and has at its front end a connecting sleeve 18 and a nib holding piece 2 carried thereby, the nib 3 being engaged between said sleeve and holding piece.

The mouth of barrel 1 is closed by means of a wing 6 pivoted at 16 at one side of the mouth of said barrel, and the barrel 1 has a longitudinal slot 8 while the sleeve 4 has a transverse pin 17 projecting through said slot 8 and carrying a knob 7 for the manipulation of said pen body, for the purpose of effecting retraction of the nib into and its projection out of the barrel 1.

Of course any different arrangement may be used to shift the position of the pen body in its barrel.

The closure 6 is yieldably urged by the

action of a spring, not shown, towards its closed position, and it is engaged and opened by the piece 2 at the time the pen body is moved to project the nib to its outer position.

Means are provided for compressing the reservoir 5, which is of soft rubber, for the purpose of filling it with ink, said means comprising the usual member (not shown) which extends through sleeve 4 and barrel 1 for its manipulation.

The above described parts are not an object of the present invention and they are described and illustrated only for purpose of disclosure of this invention.

In the nib fastening piece 2 is provided a passage 9 opening through the inner end of sleeve 18 and serving to conduct ink from the reservoir 5 to the nib 3.

Said passage 9 is controlled by a rotatable disk valve 10 having a port 11 adapted to register with said passage 9 when the disk valve 10 is in a given position, while in another angular position of said disk valve the port 11 is out of register with respect to the passage 9 and the feeding of ink from the reservoir 5 through the passage 9 and to the nib 3 is prevented.

Said disk valve 10 is fixed for rotation with the extension 12' of a stem 12 which is mounted to rotate in a central bore of the nib holding piece 2, and said stem 12 has an outwardly, laterally extending finger 13 the end of which extends into a groove 14 provided in the inner surface of the barrel 1.

The said groove 14 extends on a nearly helical line so as to cause the finger 13 to be swung and thus effect rotation of the stem 12, and the angular movement of the disk valve 10 around the axis of said stem when the pen body 4 with the nib 3 and parts 18 and 2 are moved longitudinally within the barrel 1, the respective size of the parts and shape of the said groove being such as to cause the port 11 to move from a closed to an open position, or vice-versa, on the pen body being moved longitudinally by the manipulation of the knob 7 through the extent required to carry the nib 3 into its outer writing

position or to retract it into its inactive position.

In the embodiment illustrated the disk valve 10 is fixed for rotation with the stem 12 by forming the extension 12' of said stem 12 of non-circular shape in cross section and said disk valve is held in contact with the outer end of the nib holding piece 2 by a spring 15 which is located within the sleeve 18 and engaged between said disk valve 10 and a head 19 upon the extension of the stem.

Of course the connection of the disk valve 10 with the stem may be effected in any other desired manner without departing from the spirit of the invention.

In Figure 1 the nib of the pen is shown in writing position, the nib 3 projecting from the barrel 1 and the shutter 10 having its port 11 in register with passage 9 and in this position of the parts, ink is free to flow from the reservoir 5 through the passage 9 and to the nib 3.

When it is desired to close the pen, the knob 7 is grasped and moved longitudinally of the barrel to retract the sleeve 4 and nib 3 into the barrel 1, whereupon the end of the finger 13 is caused to slide along the groove 14 and as the sleeve 4 and associated parts are prevented from rotating with respect to barrel 1 by the engagement of the finger pin 17 in the slot 8 of the barrel. The finger 13 is given angular movement with respect to the part 2 and the pen body, and thus the stem and disk valve 10 are rotated so that the port 11 of the said disk valve is moved out of registration with respect to the passage 9 and this passage is thus closed by the disk valve, under the pressure of spring 15.

To restore the nib of the pen into writing position the parts are adjusted to the positions shown in Fig. 1 by the manipulation of the knob 7, the closure 6 being swung to open position by the engagement of the holding piece 2 therewith and the shutter 10 being again rotated to its open position, with its port 11 in registration with the passage 9.

To insure certain operation of the disk valve 10 said disk valve contacts with its seat by a flat surface as illustrated.

In the embodiment shown in Figures 5 and 6 the pen barrel is indicated by 1 and has a closure 6 adapted to close its mouth. The pen body 4 is mounted to reciprocate in the said barrel, the said pen body having an end sleeve 18 in which the nib carrier 2 and nib 3 are held, the said body also including an ink reservoir 5 and the usual member 20 for compressing said reservoir which is of soft rubber, by means of a manipulating member (not shown) to fill said reservoir with ink.

The delivery of ink from the reservoir 5 through the duct 9, and to the nib 3 is controlled by a disk valve 10 held against the nib carrier 2 by a spring 15 which abuts

against a shoulder 18' on the sleeve 18. Said disk valve 10 is fixed upon a square head 12' provided upon a stem 12 rotatable in the carrier 2 and having a transverse finger 13 mounted to move in a transverse slot 21 in the nib carrier 2, the outer end of said finger engaging a spiral groove 14 formed in the inner surface of barrel 1.

Said groove 14 is provided at its outer end, with an enlarged or flaring portion 22 adjacent to the forward end of the barrel 1, the forward end of said flared portion 22 having the same span as the slot 21 of the nib carrier 2 (see Fig. 6).

The operation of this embodiment is the same as that of the first described embodiment, but when the pen body 4 with parts carried thereby is retracted into the pen barrel, the finger 13 always enters the flared portion 22 regardless of the position to which said finger may have been moved when the pen is in writing condition by an inaccurate manipulation or for any other reason, and the side walls of said flared portion 22 always guide said finger into the groove 14 and, in this manner, the pen parts are prevented from being jammed by the finger 13 engaging the front end of barrel 1 as might happen in the embodiment of Fig. 1 and the correct operation of the parts is secured under any circumstances.

By the above described construction and arrangement, the supply of ink to the nib from the ink reservoir is cut off when the nib of the pen is in retracted condition, and thus any leakage of ink is prevented, even in the event the pen is held with its nib downward.

Of course the present invention is not restricted to the cut-off arrangement described and illustrated nor to the construction of pen which has been described for the purpose of illustration, except as defined by the appended claims.

What I claim as my invention and desire to secure by United States Letters Patent is:—

1. A fountain pen comprising a pen body including an ink reservoir and a nib connected therewith, a barrel in which said pen body is mounted for longitudinal movement, manually operable means for adjusting said pen body from the exterior of the barrel, said barrel having a helical groove formed at one end with an enlarged mouth, a rotary valve intermediate said ink reservoir and nib, and a finger upon said valve engageable in said barrel groove and mouth to rotate said valve to open position when said pen body is adjusted to project the nib in writing position and to rotate the valve to closed position when said pen body is adjusted to retract the nib.

2. A fountain pen comprising a pen body including an ink reservoir, a nib and a part connecting said nib and reservoir; a rotary

shutter adjacent to said nib carrier, a stem solid with said shutter and extending outside of said nib carrier, a spring forcing said shutter on the adjacent face of said carrier, a finger projecting from said stem, a barrel in which said body and associate parts are mounted for longitudinal movement, said barrel having a helical groove with an enlarged mouth engaged by said finger, and means for shifting said pen body and associated parts with respect to said barrel, the cooperation of said finger and helical groove causing said shutter to be moved into open position when said pen body is carried into writing positions, and into closed position when said body is carried in retracted position within said barrel.

3. A fountain pen comprising a pen body including an ink reservoir, and a nib carried by the body, a member mounted for longitudinal movement with respect to said pen body, a rotatable valve between said reservoir and nib, and cooperating means on said valve and movable member for effecting movement of the valve to open position when said nib is adjusted to writing position, and movement of the valve to closed position when said nib is adjusted to non-writing position, said cooperating means comprising a projective element on the valve and a member rotatable with respect to the valve and which member is provided with a groove, the said projecting element being engageable in the groove, and the groove having a linear extent to effect rotation of the valve upon rotation of said member to assume open and closed positions.

4. A fountain pen comprising a pen body including an ink reservoir, and a nib carried by the body, a barrel in which said pen body is mounted for longitudinal movement, manually operable means for adjusting said pen body from the exterior of the barrel, a rotary valve intermediate said ink reservoir and nib, helical guiding means on said barrel, and an element on the valve engaging said means, whereby to provide for movement of the valve to open position when said pen body is adjusted to present the nib in writing position and to provide for closing of the valve when said pen body is adjusted to retract the nib.

5. A fountain pen comprising a pen body including an ink reservoir, and a nib carried by the body, a barrel in which said pen body is mounted for longitudinal movement, manually operable means for adjusting said pen body from the exterior of the barrel, said barrel having a helical groove, a rotary valve intermediate said ink reservoir and nib, and a finger upon said valve engaging in said groove whereby to provide for rotation of said valve to open position when said pen body is adjusted to bring the nib to writing position and rotation of the valve to close the same when said pen body is adjusted to retract the nib.

6. A fountain pen comprising a pen body including an ink reservoir, a nib, and a member connecting said nib and reservoir and holding the nib in place, a barrel in which said pen body is mounted for longitudinal movement, a rotary disk valve upon said member, a spring yieldably holding said valve against the adjacent end of said member, and cooperating means on said valve and barrel for effecting movement of the valve to open the same when said member is moved to bring the nib into writing position and to close the valve when said member is moved to retract the nib.

7. A fountain pen comprising a pen body including an ink reservoir, a nib, and a member connecting said nib and reservoir and hold the nib in place, a rotary disk valve upon said member, a spring yieldably holding said valve against the adjacent end, of said member, a finger upon said valve, a barrel in which said body and associated parts are mounted for longitudinal movement, said barrel having a helical groove with a widened end portion engaged by said finger, and means for shifting said pen body and associated parts with respect to said barrel, the cooperation of said finger and helical groove causing said valve to be moved into open position when said pen body is adjusted to bring the nib to writing position, and to be moved to closed position when said body is adjusted to retract the nib to position within said barrel.

In testimony whereof I have signed my name to this specification.

RODOLFO DEBENEDETTI.

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