

Sept. 3, 1968

SADAO TOKOROZAWA ET AL

3,399,946

RETRACTABLE-NIB, CAPLESS FOUNTAIN PEN

Filed June 22, 1966

2 Sheets-Sheet 1

FIG. 1

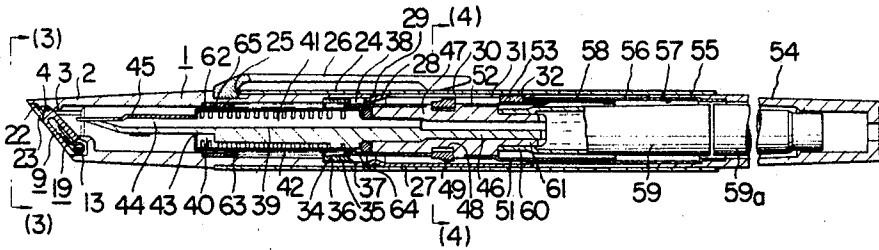


FIG. 2

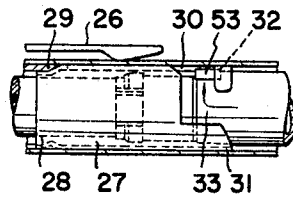


FIG. 3

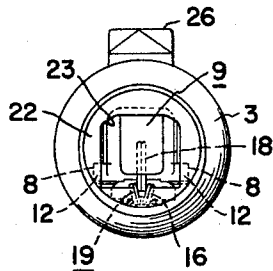


FIG. 4

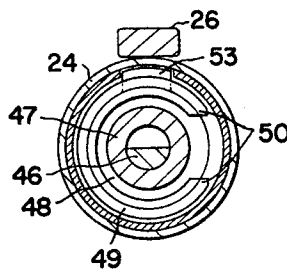


FIG. 5

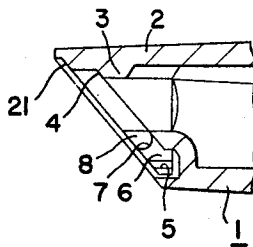
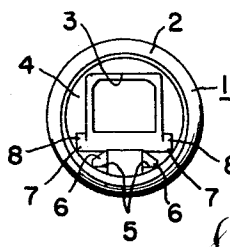


FIG. 6



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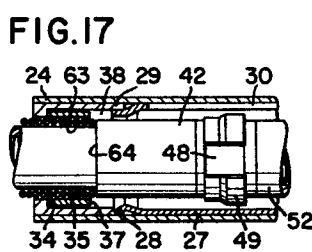
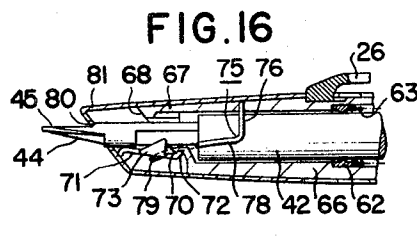
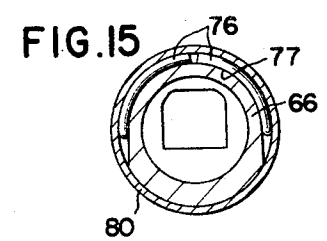
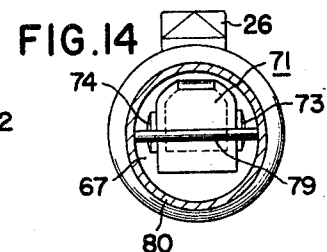
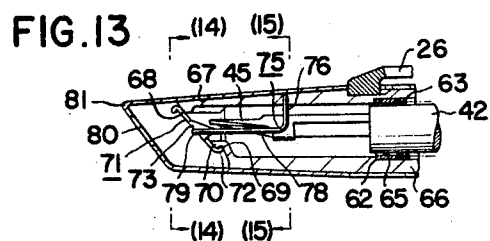
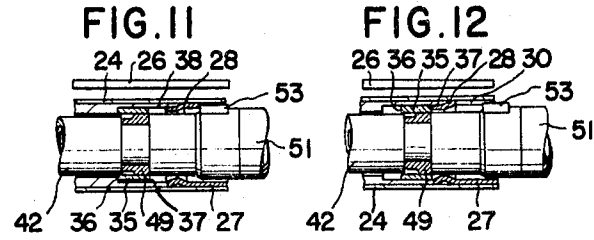
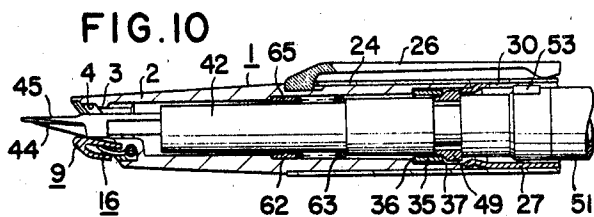
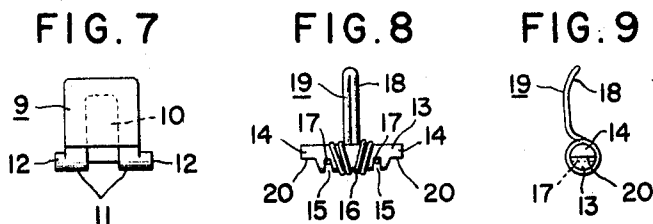
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3,399,946

RETRACTABLE-NIB, CAPLESS FOUNTAIN PEN
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Filed June 22, 1966, Ser. No. 559,448
 Claims priority, application Japan, Feb. 25, 1966, 41/16,351

14 Claims. (Cl. 401—108)

ABSTRACT OF THE DISCLOSURE

A capless fountain pen. The pen has a barrel with a pen nib retractable into the interior of the barrel through an aperture at the front end thereof. An openable closure device is provided adjacent the aperture for closing it, and is in the form of a closure plate hinged to swing into contact with the flat front surface of the barrel to close the aperture. A spring device urges the closure plate toward the closed position, the closure plate being opened by the pen nib when it is projected forward to overcome the force of the spring device.

This invention relates to retractable-nib fountain pens or so-called capless fountain pens of the type wherein the pen point or nib can be projected out of and retracted into the holder or barrel through an aperture at the forward tip of the holder.

More particularly, the invention in one aspect thereof relates to a new mechanism for opening and closing the forward end aperture of the holder of a capless fountain pen in which mechanism, when the pen nib is projected outwardly through the aperture of the holder into the writing position, a door or closure plate is actuated to open the aperture, and when the pen nib is retracted inwardly through the aperture, the closure plate closes the aperture.

Most conventional fountain pens are of the type wherein the pen nib extends from the forward end of the holder and is rigidly fixed, and a cap is fitted onto the holder in a manner to cover and protect the pen nib. For writing, the cap is removed from the holder to expose the pen nib.

Recently, there have been proposed retractable-nib, or so-called capless fountain pens of the type wherein a writing unit on which a pen nib is mounted is adapted to be projectable and retractable through an aperture at the forward extremity of the holder. In such a fountain pen, a cap for covering the pen nib as in a conventional fountain pen is unnecessary, whereby the inconvenience of uncapping and recapping the holder at each instance of writing is obviated.

In a fountain pen of this character, the writing unit on which the pen nib is mounted is adapted to move longitudinally within the holder and is advanced toward the aperture at the forward end of the holder to cause the pen nib to project out through the aperture for writing. When the writing is completed, the writing unit is retracted to cause the pen nib to be retracted through the aperture into the holder.

In a fountain pen of this character, it is necessary to close the aperture and shut off communication between the interior and exterior of the holder after the pen nib has been retracted thereinto in order to prevent the ink on and in the pen nib from drying and outside dust from adhering to the pen nib.

It is an essential object of the present invention, therefore, to provide capless fountain pens with a closing de-

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vice for closing the aperture at the forward extremity of the holder in order to prevent drying of ink on and in the pen nib in its state of retraction within the holder and adherence of dust thereto and for opening the aperture while the pen nib is in its state of outward projection through the aperture for writing.

Another object of the invention is to provide a closing device of the above stated character which is of simple construction and has a simple and reliable operation.

Still another object of the invention is to provide a closing device of the above stated character in which a closure plate automatically opens the forward end aperture of the holder when the pen nib is projected out through the aperture and automatically closes the aperture immediately after the pen nib has been retracted into the holder.

A further object of the invention is to provide a closing device of the above stated character in which the closure plate is swingably mounted at the forward aperture end of the holder barrel and is pressed in contact against the end surface of the forward aperture end of the holder or barrel by a spring, and, as the pen nib is projected out through the aperture end, the closure plate is caused to swing smoothly outwardly against the force of the spring.

Other objects and advantageous features of the invention will become apparent as the disclosure proceeds.

According to the present invention, briefly stated, there is provided a capless fountain pen having a barrel and a pen nib retractable into the interior of the barrel through an aperture at the front end thereof, characterized by an openable closure device for closing the aperture comprising, in combination, an inclined, flat front surface of the barrel bordering the aperture, a closure plate swingably hinged to swing into contact with the flat front surface to close the aperture, and a spring device to urge the closure plate constantly toward said surface, the closure plate being opened by the pen nib when it is projected forward to overcome the force of the spring device.

According to the present invention there is further provided a capless fountain pen of the above described character, further characterized by a writing unit rigidly supporting at its front end the pen nib and slidably disposed within the barrel for sliding movement in the longitudinal direction of the barrel to cause the pen nib to project forwardly out of and be retracted rearwardly into the barrel through said aperture and an actuating device for actuating the writing unit for said sliding movement and for locking the writing unit at its most forward position whereby the pen nib is projected out through the aperture, said actuating device comprising, in combination, a groove provided in the outer surface of the writing unit, a C-shaped ring inserted in said groove, a gap provided in the interior of the barrel for entrance of the C-shaped ring into said barrel, and a shift ring into the interior of which the C-shaped ring enters and moves together with the shift ring as an integral body.

The nature, principle, and details of the invention will be more clearly apparent from the following detailed description with respect to preferred embodiments of the invention, when read in conjunction with the accompanying drawings, throughout which like parts are designated by like reference numerals.

In the drawings:

FIG. 1 is a side view, for the most part in longitudinal section with a part cut away, showing a capless fountain pen provided with an example of the closing device embodying the invention with the pen nib in its state of retraction within the holder;

FIG. 2 is a fragmentary side view, partly in section,

showing one part of a guide cylinder and writing unit of the fountain pen shown in FIG. 1;

FIG. 3 is an enlarged front end view of the fountain pen shown in FIG. 1;

FIG. 4 is an enlarged sectional view taken along the plane indicated by line 4—4 and as viewed in the direction of the arrows in FIG. 1;

FIG. 5 is an enlarged, fragmentary side view, in longitudinal section, showing the forward end part of the holder structure of the pen shown in FIG. 1;

FIG. 6 is an enlarged front end view of the holder structure shown in FIG. 5;

FIG. 7 is an enlarged front view of a closure plate;

FIG. 8 is an enlarged front view of a spring device for exerting elastic force on the closure plate;

FIG. 9 is a side view of the spring device as viewed from the right in FIG. 8;

FIG. 10 is a side view, for the most part in longitudinal section, showing the forward part of the fountain pen shown in FIG. 1 with the pen nib in its forwardly projected state;

FIGS. 11 and 12 are fragmentary side views, in longitudinal section, showing only essential parts for indicating the operational states of a shift ring and a C-shaped ring during the operation of retraction of the pen nib of the pen shown in FIG. 1 from the projected position outside of the holder to the retracted position within the holder;

FIG. 13 is a side view, for the most part in longitudinal section, showing only the forward part of a capless fountain pen provided with another example of a closure device embodying the invention, the pen nib being shown in retracted state;

FIG. 14 is an enlarged cross sectional view taken along the plane indicated by line 14—14 in FIG. 13 and as viewed in the direction of the arrows;

FIG. 15 is an enlarged cross sectional view taken along the plane indicated by line 15—15 in FIG. 13 and as viewed in the direction of the arrows, the writing unit here being omitted;

FIG. 16 is a side view, for the most part in longitudinal section, showing the fountain pen of FIG. 13 with its pen nib in the state of projection out of the holder; and

FIG. 17 is a fragmentary side view, in longitudinal section and on an enlarged scale, of the locking structure of the pen shown in FIG. 1.

Throughout the present disclosure, designations of vertical and lateral directions and positions, such as "upper," "lower," and "transverse," correspond to those of the fountain pen as viewed in FIG. 1. Designations such as "front" and "forward" refer to the writing end, while "rear" and "rearward" refer to the opposite end.

Referring first to FIGS. 1 through 12, inclusive, the example of the fountain pen according to the invention shown therein has an outer casing or barrel comprising a front barrel generally designated by reference numeral 1 a mid-body outer cylinder 24, and a rear plunger cylinder 54. The forward aperture end part 2 of the barrel 1 is provided with a projection 3 projecting inwardly from the inner wall of the forward aperture end part 2. The outer surface of this projection 3 forms a flat shoulder surface 4 which is inclined (upwardly and forwardly) relative to the centerline of the holder or barrel.

The forward aperture end part 2 is further provided with opposed recesses 6 having flat surfaces 5 and opposed recesses 8 having semi-cylindrical concave surfaces 7 above the recesses 6 as viewed in FIGS. 5 and 6, each of the pairs of opposed recesses 6 and 8 being aligned horizontally and transversely relative to the axis of the barrel 1. The semi-cylindrical surfaces 7 are for receiving and supporting trunnions 12 of a closure plate 9 as described more fully hereinbelow.

The closure plate 9, as shown most clearly in FIG. 7, has a central hollow space 10 open at the bottom and lower end surfaces 11 of semi-cylindrical convex form, at the outer sides of which there are provided outwardly

projecting trunnions 12 of cylindrical form. The hollow space 10 of the closure plate 9 is for engaging with a lever part 18 of a spring device generally designated by reference numeral 19 and shown clearly in FIGS. 8 and 9.

The lever part 18 is formed as an upward extension of the middle part of a spring wire 16 such as piano wire wound a number of turns around a cylindrical core member 13, the extremities 17 of the spring wire 16 being inserted and anchored in grooves 15 formed in the core member 13 as shown in FIGS. 8 and 9. The two end parts 14 of the core member 13 are of convex semi-cylindrical shape on their upper half parts, their lower half parts being cut away, whereby these end parts 14 have flat lower surfaces 20.

In assembling the closure plate 9 and spring device 19, the closure plate 9 with the lever part 18 of the spring wire 16 inserted in the hollow space 10 is placed in the aperture end 2 of the barrel 1 so that the trunnions 12 of the closure plate 9 are supported by the surfaces 7 of the aforementioned recesses 8, which thereby become bearing points of the trunnions 12 of the closure plate 9.

Thus, the closure plate 9 is swingably installed in the aperture end 2 of the barrel 1, and, at the same time, the two ends 14 of the core member 13 are placed into the aforementioned recesses 6 with their flat lower surfaces 20 resting on the flat surfaces 5 of the recesses 6. The two ends 14 are fitted into the deepest part of the recesses 6 and there fixed in place.

The lever part 18 of the spring wire 16 constantly urges the closure plate 9 toward the aforementioned flat shoulder surface 4 of the end part 2, whereby the closure plate 9, in closed state, is pressed firmly against the flat shoulder surface 4, thereby shutting off communication between the interior and exterior of the barrel 1. The front part of the closure plate 9 projects slightly through a through hole 23 in a cover plate 22 fixed to a flat shoulder surface 21 positioned forward of the flat shoulder surface 4.

The rear outer part of the barrel 1 up to its midpoint is covered by the aforementioned outer cylinder 24 fitted thereonto. A clip 26 anchored to the barrel 1 projects outwardly through the forward end 25 of the outer cylinder 24.

As shown in FIGS. 1, 2 and 17, a guide cylinder 27 is inserted into the outer cylinder 24 and is fixed at its front end 28 to the rear end 29 of the barrel 1. The guide cylinder 27 is provided at its upper part with a straight guide slot 30 parallel to the centerline of the guide cylinder 27. An L-shaped slot 33 is provided in the guide cylinder 27 to communicate with the guide slot 30 at a point thereof which is slightly forward of the rear end 32 of the guide slot 30.

A shift ring 35 is inserted between the front end 28 of the guide cylinder 27 and a shoulder 34 of the barrel 1. With the front surface 36 of the shift ring 35 in contact with the shoulder 34 of the barrel 1, a gap 38 is formed between the rear surface 37 of the shift ring 35 and the surface of the front end 28 of the guide cylinder 27 as shown in FIGS. 1 and 17.

The pen nib 45 of the fountain pen is mounted on the front end 44 of an ink feed member 41 which is disposed substantially along the centerline of the fountain pen. The ink feed member 41 is provided with an ink outflow groove 39 and an air intake groove 40 and is covered by an ink feed cover 42 provided at its front end with a through hole 43, through which the front end 44 of the feed member 41 projects forwardly.

A cylinder 47 is fixedly inserted between the rear end 46 of the feed member 41 and the ink feed cover 42 and is provided with an annular peripheral groove 48, in which a C-shaped ring 49 is loosely fitted as indicated in FIGS. 4 and 17. The C-shaped ring 49 upon receiving an external constricting force is reduced in outer diameter, its extreme ends 50 being caused to approach each other,

and it returns to its original state when the external force is removed. The front end 52 of a connecting cylinder 51 is fixed to the cylinder 47, and a lug 53 is fixed to the upper surface of the connecting cylinder 51.

The aforementioned rear plunger cylinder 54 is fixed at its front end 55 to the rear end 57 of a cover cylinder 56, the front end 58 of which is detachably engaged with the connecting cylinder 51, the end surface of the front end 58 abutting against the lug 53 of the connecting cylinder 51. Within the cover cylinder 56 and the rear part of the connecting cylinder 51, there is concentrically disposed an ink reservoir 59 having a front open end 60 which is detachably fitted onto a rear small-diameter part 61 of the cylinder 47.

When a new ink reservoir 59 is thus fitted onto the small-diameter part 61, a plug member (not shown) which has been closing the end 60 of the ink reservoir 59 is forcibly thrust into the ink reservoir 59 by the small-diameter part 61, whereby the end 60 is opened. As a result the ink within the ink reservoir 59 flows out into the aforementioned ink outflow groove 39 of the ink feed member 41.

A spare ink reservoir 59a is stored within the rear plunger cylinder 54. The aforementioned ink feed cover 42 and the rear plunger cylinder 54 are integrally connected to constitute a writing unit.

To hold the pen nib 45 in the retracted state as indicated in FIG. 1 within the barrel 1, the lug 53 of the connecting cylinder 51 is transferred from the L-shaped slot 33 into the guide slot 30 as indicated by a bent arrow in FIG. 2. Thereupon, the rear end of a coil spring 63 abutting at its front end against an annular packing 62 fixed to the inner wall surface of the barrel 1 presses elastically against a shoulder 64 of the ink feed cover 42, and the lug 53 of the connecting cylinder 51 is positioned at the rear end 32 of the guide slot 30 of the guide cylinder 27. At the same time, a ring-shaped ridge 65 of the packing 62 projecting inwardly is held in intimate contact with the outer peripheral surface of the ink feed cover 42, whereby drying of the ink in the pen nib 45 and adhesion of dust to the pen nib 45 are prevented.

For writing, the rear plunger cylinder 54 is pushed forward to force the writing unit toward the aperture end 2 of the barrel 1, whereupon the pen nib 45 presses against the closure plate 9, and immediately thereafter the front end 44 of the ink feed member 41 pushes against the closure plate 9 to open the aperture end 2 as the pen nib 45 is projected outwardly through the aperture of the end 2.

During this operation, the C-shaped ring 49 passes by the end surface of the front end 28 of the guide cylinder 27 and reaches the gap 38, where the C-shaped ring 49 is permitted to expand and abut against the end surface of the front end of the guide cylinder 27. Accordingly, the writing unit is locked, and the pen nib 45 is not forced into the barrel 1 when a reaction force due to writing is exerted on the pen nib 45. This state of the fountain pen is indicated in FIG. 10.

To retract the projecting pen nib 45 into the barrel 1, the rear plunger cylinder 54 is again pushed forward to shift the writing unit toward the aperture end 2 of the barrel 1, whereupon the lug 53 of the connecting cylinder 51 shifts the guide slot 30 of the guide cylinder 27, whereby the C-shaped ring 49 is compressed, without rotation of the writing unit, and enters the interior of the shift ring 35. The outer surface is pressing against the inner wall surface of the shift ring 35 as indicated in FIG. 11.

The plunger cylinder 54 is then released, whereupon, with the C-shaped ring 49 and the shift ring 35 constituting an integral body, the writing unit is caused to retract rearwardly by the force of the coil spring 63, and the rear surface 37 of the shift ring 35 strikes against the end surface of the front end 28 of the guide cylinder 27 as indicated in FIG. 12. The C-shaped ring 49 is thereby

permitted, in its state at the time, to enter the guide cylinder 27, and the writing unit retracts further, whereby the pen nib 45 is retracted into the barrel 1 through the aperture at its end 2.

In accordance with the above described retraction of the writing unit and pen nib 45, the closure plate 9 is caused by the spring device 19 to swing toward the flat surface 4 of the aperture end 2. At the same time, the lug 53 of the connecting cylinder 51 strikes against the rear end of the guide slot 30 of the guide cylinder 27, and the writing unit returns to the position indicated in FIGS. 1 and 17, whereupon the closure plate 9 contacts the flat surface 4 of the aperture at the end 2 to close the aperture.

In another embodiment of the present invention as illustrated in FIGS. 13 through 16, inclusive, an inclined (forwardly and upwardly) end surface 68 is formed in the aperture end part 67 of the barrel 66. A recess 69 is formed at the lower part of the surface 68, and at the same time there is formed an edge projection 70 which is horizontal and perpendicular to the longitudinal axis of the barrel 66 and is adapted to function as a pivotal member for a closure plate 71.

The closure plate 71 is provided along its lower extremity with a bent edge flange 72 sharply bent in the rearward direction and at its two side edges with projections 73 and 74. The closure plate 71 is supported and closed against the surface 68 by a spring 75 formed from an elastic wire such as piano wire into a shape consisting of a semi-circular fixed part 76 perpendicular to the axis of the barrel 66, leg parts 78 extending forwardly from the fixed part 76 and functioning as spring members, and a horizontal, transverse part 79 spanning the front ends of the leg parts 78 and functioning to exert spring force against the front side of the closure plate 71.

In the assembled state, the fixed part 76 of the spring device 75 is fixedly fitted into a groove 77 of the barrel 66. The leg parts 78 at their front ends are in contact with the outer surfaces of the projections 73 and 74 of the closure plate 71 which are resting at the lower parts thereof on the edge projection 70. The transverse part 79 is in contact with the front surface of the closure plate 71 and is constantly exerting thereon a spring force provided by the leg parts 78 and urging the closure plate 71 toward its closure position against the surface 68 of the aperture end 67 of the barrel 66.

A fixed protective cap 81 having a through hole 80 for passage of the pen nib 45 covers the barrel 66 and, extending slightly forward from the extreme front end of the barrel 66, forms a protected chamber in which the closure plate 71 may operate.

The writing unit (i.e., the integral combination of the ink feed cover 42 and the rear plunger cylinder) of this pen is constructed similarly to that in the example first described and illustrated in FIGS. 1 through 12 and 17. However, since the stroke or shift distance of the writing unit from the position for holding the pen nib 45 retracted within the barrel 66 to the position for holding the pen nib 45 in the position for writing beyond the protective cap 81 is somewhat longer than that in the previous example, the gap in the barrel 66 corresponding to the gap 38 within the barrel 1 is designed to suit this stroke of the writing unit.

For writing, the rear plunger cylinder 54 is pushed forward as in the previous example to cause a C-shaped ring 49 to enter the gap corresponding to the gap 38 within the barrel 1 and thereby to lock the writing unit. As the pen nib 45 is thus advanced forward toward the closure plate 71, it presses the closure plate 71, and immediately thereafter the front end 44 of the ink feed member 41 presses the closure plate 71, which thereby swings with its lower part continually supported on the edge projection 70 of the aperture end 67 of the barrel 66, whereby the aperture of the aperture end 67 is opened. At the same time, the pen nib 45 is projected through the hole 80 of

the protective cap 81 to the writing position and held in this position as indicated in FIG. 16.

To retract the pen nib the barrel 66, the plunger cylinder 54 is again pushed forward, whereupon the writing unit and the shift ring 35 operate in the same manner as described hereinbefore with respect to the first example, whereby, as the pen nib 45 retracts into the barrel 66, the transverse part 79 of the spring device 75 for transmitting closure force to the closure plate 71 causes the closure plate 71 to swing toward and against the front end surface 68 of the aperture end 67 of the barrel 66 and thereby to close the aperture in the aperture end 67.

Thus, it will be seen that the present invention achieves the objects thereof as set forth hereinbefore and as are apparent from the foregoing disclosure.

It should be understood, of course that the foregoing disclosure relates to only preferred embodiments of the invention and that it is intended to cover all changes and modifications of the examples of the invention herein chosen for the purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention as set forth in the appended claims.

What we claim is:

1. A capless fountain pen comprising: a barrel having an aperture at its front end; a pen nib; a writing unit having the pen nib rigidly supported at its front end and slidably disposed within the barrel for sliding movement in the longitudinal direction of the barrel to cause the pen nib to project forwardly out of and be retracted rearwardly into the barrel through said aperture; an actuating device for actuating the writing unit in said sliding movement and for locking the writing unit at its most forward position whereby the pen nib is projected out through the aperture, said actuating device comprising, in combination, a C-shaped ring the outer surface of the writing unit having a groove therein, said ring being mounted in said groove, the interior of the barrel having a gap therein for entrance of the C-shaped ring into said gap, and a shift ring into the interior of which the C-shaped ring enters and moves together with the shift ring as in an integral body; and an openable closure device for closing said aperture, an apertured end part constituting the front end of the barrel and having an inclined, flat front surface around said aperture; a closure plate swingably supported on said apertured end plate and adapted to swing flat against said flat front surface for closure of the aperture; and a spring device for continually urging the closure plate to swing toward the flat front surface, said spring device consisting essentially of a core member, the apertured end part having recesses therein in which the ends of said core member are fixed, and a spring wire wound around the core member, the ends of the spring wire being anchored to the core member, and an intermediate part of the spring wire being formed into a lever part and exerting spring force on the closure plate.

2. In a capless fountain pen having a barrel and a pen nib retractable into the interior of the barrel through an aperture at the front end thereof, an openable closure device for closing said aperture comprising, in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface around said aperture; a closure plate swingably supported on said apertured end plate and adapted to swing flat against said flat front surface for closure of the aperture; and a spring device for continually urging the closure plate to swing toward the flat front surface, said spring device consisting essentially of a core member, the apertured end part having recesses therein in which the ends of said core member are fixed, and a spring wire wound around the core member, the ends of the spring wire being anchored to the core member, and an intermediate part of the spring wire being formed into a lever part and exerting spring force on the closure plate.

3. The combination as claimed in claim 2 in which said spring device is made of spring wire and consisting

of a fixed part rigidly fixed to the core, and said lever comprises leg parts extending outwardly of said core from said fixed part, and a transverse part connecting the free ends of said leg parts and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface.

4. The combination as claimed in claim 3 in which said apertured end part has a recess therein, and said closure plate having projections on opposite sides thereof, said projections engaged in said recess, the closure plate thereby being swingably supported for opening and closing the aperture.

5. The combination as claimed in claim 2 in which said apertured end part has recesses therein and said closure plate has trunnions thereon rotatably supported in said recesses, said closure plate being supported swingably by said trunnions for swinging movement to contact said surface thereby to close the aperture.

6. A capless fountain pen as claimed in claim 1 in which said spring device is made of spring wire and consisting of a fixed part rigidly fixed to the core, and said lever comprises leg parts extending outwardly of said core from said fixed part, and a transverse part connecting the free ends of said leg parts and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface.

7. A capless fountain pen as claimed in claim 1 in which said apertured end part has a recess therein, and said closure plate having projections on opposite sides thereof, said projections being engaged in said recess, the closure plate thereby being swingably supported for opening and closing the aperture.

8. A capless fountain pen as claimed in claim 1 in which said apertured end part has recesses therein and said closure plate has trunnions thereon rotatably supported in said recesses, said closure plate being supported swingably by said trunnions for swinging movement to contact said surface thereby to close the aperture.

9. In a capless fountain pen having a barrel and a pen nib retractable into the interior of the barrel through an aperture at the front end thereof, an openable closure device for closing said aperture comprising, in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface bordering said aperture; a closure plate for contacting said surface to close the aperture; and a spring device of spring wire and consisting of a fixed part rigidly fixed to the barrel, leg parts extending forwardly from said fixed part, and a transverse part connecting the free ends of said leg parts, said leg parts bearing on said closure plate and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface, the closure plate thereby being brought against said surface for closure of the aperture and being openable by a counterforce overcoming the force of the spring device.

10. In a capless fountain pen having a barrel with an aperture at the front end thereof and a pen nib retractable into the interior of the barrel through said aperture, an openable closure device for closing said aperture comprising, in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface bordering said aperture and having a recess therein; a closure plate for contacting said surface to close the aperture, said closure plate having projections at opposite sides thereof, said projections being inserted into said recess, the closure plate thereby being swingably supported for opening and closing the aperture; and a spring device of spring wire and consisting of a fixed part rigidly fixed to the barrel, leg parts extending forwardly from said fixed part, and a transverse part spanning the front extremities of said leg parts, said leg parts being on said closure plate and transmitting spring force from

said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface, the closure plate thereby being brought against said surface for closure of the aperture and being openable by a counterforce overcoming the force of the spring device.

11. In a capless fountain pen having a barrel with an aperture at the front end thereof and a pen nib retractable into the interior of the barrel through said aperture, an openable closure device for closing said aperture comprising, in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface bordering said aperture and having a part thereon constituting a pivotal point; a closure plate swingably supported on said part for swinging movement to contact said surface thereby to close the aperture; and a spring device of spring wire and consisting of a fixed part rigidly fixed to the barrel, leg parts extending forwardly from said fixed part, and a transverse part spanning the front extremities of said leg parts, said leg parts bearing against said closure plate and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface, the closure plate thereby being brought against said surface for closure of the aperture and being openable by a counterforce overcoming the force of the spring device.

12. A capless fountain pen comprising: a barrel having an aperture at its front end; a writing unit having the pen nib rigidly supported at its front end and slidably disposed within the barrel for sliding movement in the longitudinal direction of the barrel to cause the pen nib to project forwardly out of and be retracted rearwardly into the barrel through said aperture; an actuating device for actuating the writing unit in said sliding movement and for locking the writing unit at its most forward position whereby the pen nib is projected out through the aperture, said actuating device comprising, in combination: a C-shaped ring, the outer surface of the writing unit having a groove therein and said ring being positioned in said groove, the interior of the barrel having a gap therein for entrance of the C-shaped ring into said gap, and a shift ring into the interior of which the C-shaped ring enters and moves together with shift ring as an integral body; and an openable closure device for closing said aperture comprising, in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface bordering said aperture; a closure plate for contacting said surface to close the aperture; and a spring device of spring wire and consisting of a fixed part rigidly fixed to the barrel, leg parts extending forwardly from said fixed part, and a transverse part connecting the free ends of said leg parts, said leg parts bearing on said closure plate and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface, the closure plate thereby being brought against said surface for closure of the aperture and being openable by a counterforce overcoming the force of the spring device.

13. A capless fountain pen comprising: a barrel having an aperture at its front end; a writing unit having the pen nib rigidly supported at its front end and slidably disposed within the barrel for sliding movement in the longitudinal direction of the barrel to cause the pen nib to project forwardly out of and be retracted rearwardly into the barrel through said aperture; an actuating device for actuating the writing unit in said sliding movement and for locking the writing unit at its most forward position whereby the pen nib is projected out through the aperture, said actuating device comprising, in combination, a C-

shaped ring, the outer surface of the writing unit having a groove therein and said ring being positioned in said groove, the interior of the barrel having a gap therein for entrance of the C-shaped ring into said gap, and a shift ring into the interior of which the C-shaped ring enters and moves together with shift ring as an integral body; and an openable closure device for closing said aperture comprising, in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface bordering said aperture and having a recess therein; a closure plate for contacting said surface to close the aperture, said closure plate having projections opposite sides thereof, said projections being inserted into said recess, the closure plate thereby being swingably supported for opening and closing the aperture; and a spring device of spring wire and consisting of a fixed part rigidly fixed to the barrel, leg parts extending forwardly from said fixed part, and a transverse part spanning the front extremities of said leg parts, said leg parts bearing on said closure plate and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface, the closure plate thereby being brought against said surface for closure of the aperture and being openable by a counterforce overcoming the force of the spring device.

14. A capless fountain pen comprising: a barrel having an aperture at its front end; a writing unit having the pen nib rigidly supported at its front end and slidably disposed within the barrel for sliding movement in the longitudinal direction of the barrel to cause the pen nib to project forwardly out of and be retracted rearwardly into the barrel through said aperture; an actuating device for actuating the writing unit in said sliding movement and for locking the writing unit at its most forward position whereby the pen nib is projected out through the aperture, said actuating device comprising, in combination, a C-shaped ring, the outer surface of the writing unit having a groove therein and said ring being positioned in said groove, the interior of the barrel having a gap therein for entrance of the C-shaped ring into said gap, and a shift ring into the interior of which the C-shaped ring enters and moves together with shift ring as an integral body; and an openable closure device for closing said aperture comprising in combination: an apertured end part constituting the front end of the barrel and having an inclined, flat front surface bordering said aperture and having a part thereon constituting a pivotal point; a closure plate swingably supported on said part for swinging movement to contact said surface thereby to close the aperture; and a spring device of spring wire and consisting of a fixed part rigidly fixed to the barrel, leg parts extending forwardly from said fixed part, and a transverse part spanning the front extremities of said leg parts, said leg parts bearing against said closure plate and transmitting spring force from said leg parts to the closure plate thereby to urge the closure plate constantly toward said flat front surface, the closure plate thereby being brought against said surface for closure of the aperture and being openable by a counterforce overcoming the force of the spring device.

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