

Dec. 20, 1966

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3,292,593

RETRACTABLE NIB FOUNTAIN-PEN

Filed June 29, 1964

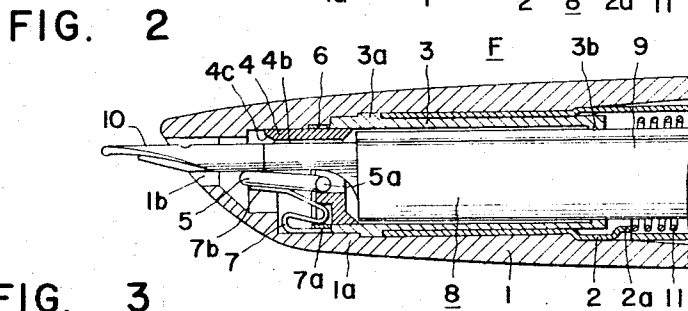
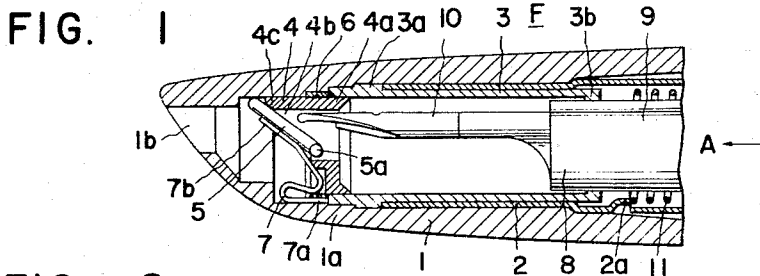


FIG. 3

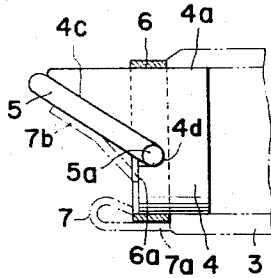


FIG. 4

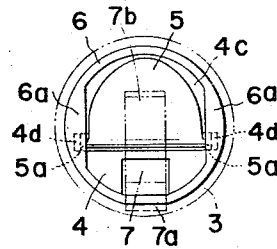


FIG. 5

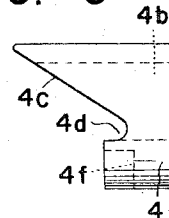


FIG. 6

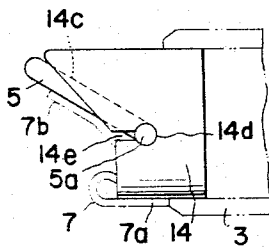


FIG. 7

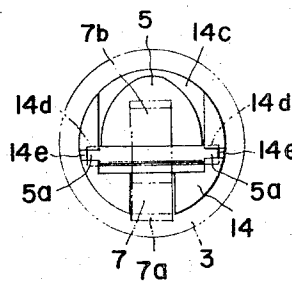
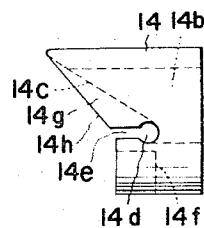


FIG. 8



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RETRACTABLE NIB FOUNTAIN-PEN

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Filed June 29, 1964, Ser. No. 378,516

Claims priority, application Japan, Nov. 27, 1963,

38/88,950

2 Claims. (Cl. 120—42.03)

This invention relates to a cover assembly for a retractable nib fountain-pen in which, when the pen nib is advanced through a forward end opening of the pen barrel for the purpose of writing, a cover plate in said opening is kept opened, and when the pen nib is retracted through the forward end opening of the pen barrel into the latter, the cover plate is kept closed so as to prevent the communication between the interior and exterior of the pen barrel.

In a conventional fountain-pen, the pen nib is rigidly secured to and projects from the forward end of the pen barrel. When such a fountain-pen is not being used, a cover cap is placed on the forward end of the barrel so as to cover the pen nib, while the cover cap is removed from the barrel so as to expose the pen nib when the pen is to be used for writing.

Recently, there have been proposed retractable fountain-pens in which the pen nib is retractable into the pen barrel. Such fountain-pens are not provided with caps for covering the pen nibs, thereby eliminating the inconvenience of removing the caps from the pen barrels for the purpose of writing. In the use of such retractable fountain-pens, a writing unit carrying the pen nib is advanced through the pen barrel in order to cause the pen nib to project beyond the forward end of the barrel, and after use, the writing unit is retracted to position the pen nib in the barrel. In such retractable fountain-pens, however, it is necessary that the pen nib retracted in the pen barrel be protected from outside dust and from becoming dry by cutting off communication between the interior and exterior of the pen barrel.

Accordingly, a main object of this invention is to provide closing means for retractable nib fountain-pens which protects the pen nib retracted within the pen barrel from outside dust and foreign matter and from becoming dry, while permitting the pen nib to be projected beyond the forward end opening of the barrel during use of the fountain-pen.

Another object of this invention is to provide closing means of the above character, which is of simple construction and operates reliably.

Still another object of this invention is to provide a closing means for retractable nib fountain-pens which automatically opens the forward end opening of the pen barrel when the pen nib is advanced for projection from said opening, and which automatically closes the forward opening of the barrel when the pen nib is retracted.

A further object of this invention is to provide a closing means for retractable nib fountain-pens in which a cover plate for closing the forward end opening of the barrel is, in closed position thereof, supported along a canted end face of a cover plate holder, so that the advancing movement of the pen nib is smoothly performed.

Other objects and features of this invention will become apparent as the description proceeds in connection with the accompanying drawings in which like parts are designated by like reference characters, and in which:

FIG. 1 is an enlarged, fragmentary view, in longitudinal section, of a retractable nib fountain-pen provided with a cover closing assembly according to this invention, showing the state in which the pen nib is retracted within the pen barrel;

FIG. 2 is a view similar to that of FIG. 1, but showing

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another state in which the pen nib is projected for writing from the barrel;

FIG. 3 is a side view, partly in section, of the cover closing assembly according to this invention;

FIG. 4 is a front view of the cover closing assembly shown in FIG. 3;

FIG. 5 is a side view of a cover plate holder which constitutes a part of the cover closing assembly of FIG. 3;

FIG. 6 is a side view of another form of the cover closing assembly according to this invention;

FIG. 7 is a front view of the cover closing assembly shown in FIG. 6; and

FIG. 8 is a side view of a cover plate holder which constitutes a part of the cover closing assembly shown in FIG. 6.

Referring now to FIGS. 1 and 2, the fountain-pen according to this invention is generally designated by the reference letter F and includes a barrel 1 having a forward end portion 1a thereof longitudinally opened as shown at 1b. To the inner wall of the barrel 1 is rigidly secured a longitudinally extending guide cylinder 2, in which is fixed an inner cylinder 3. This inner cylinder 3 has a forward end 3a thereof rigidly secured to the inner wall of the forward end portion 1a of the barrel 1.

A cover plate holder 4 is rigidly fitted in the bore of the forward end portion 1a of the barrel 1. This cover plate holder 4 is in the form of a cylinder and extends into the forward end 3a of the inner cylinder 3, the rear end 4a of the holder 4 being secured to the inner wall of the cylinder 3.

Referring to FIGS. 3-5, in which the cover plate holder 4 is shown in detail, a longitudinal bore 4b is cut through the holder 4 in eccentric relation thereto. The forward end of the holder 4 is partially canted at 4c and the canted end face 4c terminates in a pair of pivot pin support recesses 4d arranged at the two sides of the holder 4.

The cover plate holder 4 carries a cover plate 5 which has at the two sides thereof a pair of pivot pins 5a projecting in opposite directions from the lower end of the cover plate 5. The pair of pivot pins 5a are rotatably seated in the pivot pin support recesses 4d of the holder 4, and thus the cover plate 5 can swing about the axis of the pivot pins 5a so as to open or close the forward opening of the bore 4b in the holder 4.

A collar 6 is rigidly fitted on the outer surface of the holder 4 and has at its forward end a pair of transversely extending end plates 6a, which are partially in contact with the forward end face of the holder 4 and are also in contact with the pivot pins 5a of the cover plate 5 to prevent the pins 5a from moving out of the recesses 4d.

A generally N-shaped leaf spring 7 has one end 7a thereof secured to the collar 6 and the other end 7b thereof in contact with the forward face of the cover plate 5, so as to force the plate 5 into tight engagement with the canted end face 4c of the holder 4. The intermediate or retracted portion of the N-shaped leaf spring 7 is received in a recess 4f of the holder 4.

Referring back to FIGS. 1 and 2, a cylindrical ink reservoir 9 is provided at its forward end with a pen nib 10, and the reservoir 9 and pen nib 10 constitute a writing unit 8 which is longitudinally slidable in the bore of the barrel 1. The writing unit 8 passes through the guide cylinder 2 and is guided thereby. A coil spring 11 arranged about the ink reservoir 9 abuts at its forward end to a projection 2a in the guide cylinder 2 and has its rear end secured to the unit 8, thus imparting a force tending to move the writing unit 8 rearwardly into retracted position.

In the state where the pen nib 10 is retracted within the barrel 1, the writing unit 8 is kept in the position as shown in FIG. 1 and the cover plate 5 is free from the pen nib 10 thus being in tight engagement with the canted

face 4c of the cover plate holder 4 so as to close the bore 4b of the latter, while the rear end 3b of the inner cylinder 3 is in tight engagement with the outer surface of the cylindrical ink reservoir 9. Thus, the interior of the inner cylinder 3 is shut off from the outside.

In writing with the fountain-pen as above mentioned, the writing unit 8 is manually pushed forwardly in the direction of the arrow A of FIG. 1 as is known in the retractable nib writing instrument. The pen nib 10 pushes the cover plate 5, thus causing the same to swing in counter-clockwise direction about the axis of the pivot pins 5a so that the cover plate 5 takes the position shown in FIG. 2 to open the forward opening of the bore 4b, and the pen nib 10 projects beyond the opening 1b of the barrel 1. In the position shown in FIG. 2, the writing unit 8 is locked to the barrel 1 in any conventional manner known in the art. Thus, the fountain-pen is ready for writing.

When it is desired to retract the pen nib 10 into the barrel 1, the writing unit 8 is moved in the direction opposite to the direction A of FIG. 1 by releasing the locking means for the unit 8. The coil spring 11 assists the retracting movement of the unit 8. When the pen nib 10 has been retracted in the inner cylinder 3, the cover plate 5 is forced to swing in the clockwise direction by the force of the leaf spring 7 and is brought into tight contact with the canted end face 4c of the cover plate holder 4, thus closing the latter.

In FIGS. 6-8 there is illustrated another form of the cover plate holder which is designated by the numeral 14. The cover plate holder 14 includes a longitudinal bore 14b which is cut through the holder in eccentric relation thereto, and also includes a canted end face 14c which extends partially across the holder 14. The canted end face 14c terminates in a pair of pivot pin supporting recesses 14d situated at the two sides of the holder 14. The outer layer portion of the holder 14 extends forwardly, as shown at 14g, beyond the canted end face 14c. The extension 14g also has a canted end face 14h and includes a pair of cutouts 14e having a width smaller than the inner diameter of the recesses 14d and extending longitudinally into the recesses 14d.

The cover plate 5 is seated in place by forcing the pivot pins 5a thereof through the cutouts 14e of the holder 14 into the supporting recesses 14d. In this case, however, it is required that the holder 14 be made of a relatively elastic material. The cover plate 5 is biased to closed position by means of the generally N-shaped leaf spring 7 which has one end 7a thereof secured to the holder 14 and another end 7b being in contact with the plate 5. The cover plate 5, in its closed position, is in tight contact with the canted end face 14c, and the extension 14g surrounds the cover plate 5 in guiding relation thereto.

In this form of the cover plate holder, the collar 6 as shown in FIG. 3 is unnecessary for preventing movement of the pivot pins 5a.

Thus, it will be apparent that this invention provides a cover closing means for fountain-pens, in which a cover plate for the pen nib is pivoted for smooth closing and opening movements by means of simple pivoting means,

and in which the cover plate for the pen nib is always biased to closed position by means of a spring so as to close the bore of the fountain-pen so that the pen nib retracted within the pen barrel may be maintained free from outside dust and kept wet with ink.

Although only preferred embodiments of the invention have been specifically illustrated and described herein, it is to be understood that minor modifications may be made in accordance with this invention within the spirit and scope of the invention, as defined in the appended claims.

What I claim is:

1. A cover assembly adapted to be fitted within the forward end opening of a retractable nib fountain-pen, comprising a generally cylindrical cover plate holder including a longitudinal bore therethrough and an end face at the forward end of the holder and further including a pair of pivot pin support recesses on the two sides of said end face, said pivot pin support recesses facing longitudinally forwardly, a cover plate having on opposite sides of the edge thereof a pair of pivot pins and pivotally supported on said end face of said holder with said pivot pins received in said pivot pin support recesses, so as to be capable of opening or closing the forward end of said longitudinal bore in the holder, a collar rigidly fitted on the outer surfaces of said holder and including at the forward end thereof a pair of transversely extending end plates which cover said recesses to prevent said pivot pins in the recesses from moving out of the latter, and a spring means continuously biasing said cover plate toward said canted end face so as to tightly close said bore of the holder.

2. A cover assembly adapted to be fitted within the forward end opening of a retractable nib fountain-pen, comprising a generally cylindrical cover plate holder including a longitudinal bore therethrough and an end face at the forward end of the holder and further including a pair of pivot pin support recesses on the two sides of said end face and a pair of longitudinal cutouts extending from said end face into said recesses, a cover plate including on opposite sides of the edge thereof a pair of pivot pins and pivotally supported on said end face with said pivot pins received in said pivot pin support recesses, so as to be capable of opening or closing the forward end of said longitudinal bore, said cover plate holder being of a material sufficiently resilient to allow separation of the edges of the longitudinal cutouts to move said pivot pins therealong to said recesses, and a spring means continuously biasing said cover plate toward said canted end face so as to tightly close said bore of the holder.

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