Sept. 16, 1952 L. P. MARTIN 2,610,611

WRITING INSTRUMENT

Filed Nov. 12, 1948

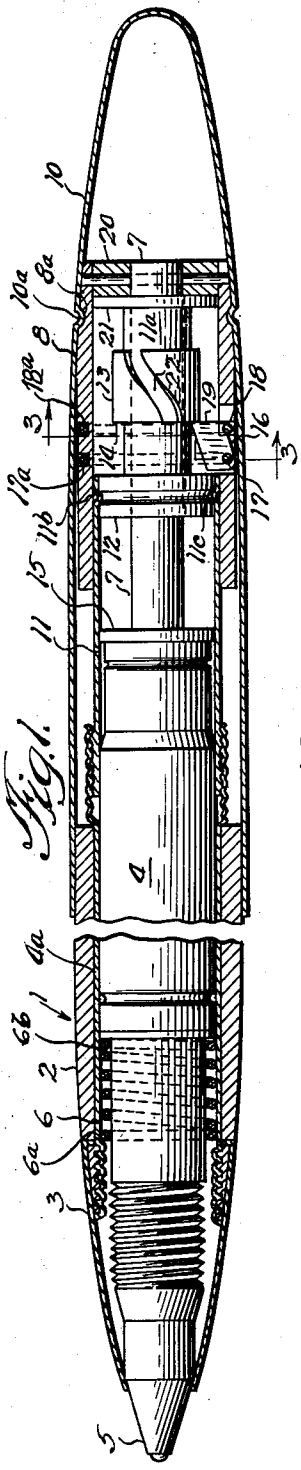

Fig. 1.

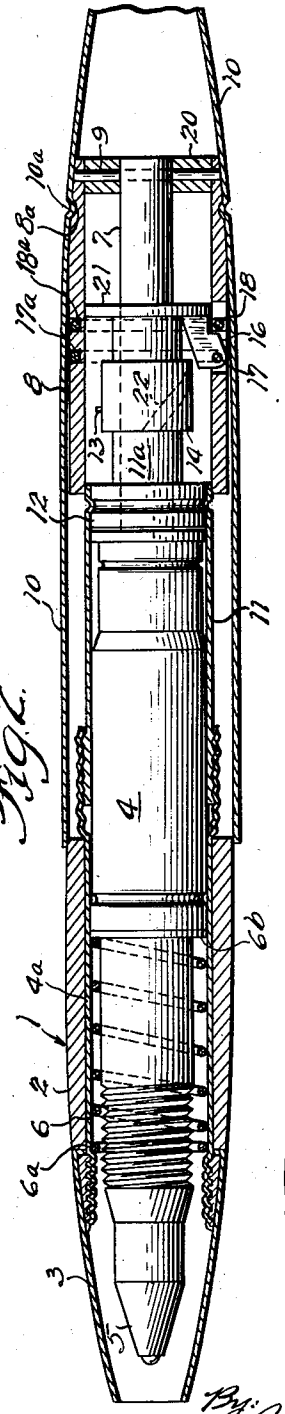

Fig. 2.

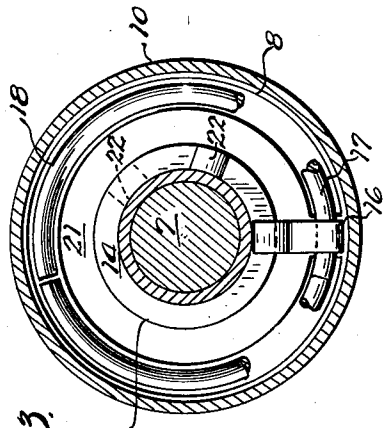

Fig. 3.

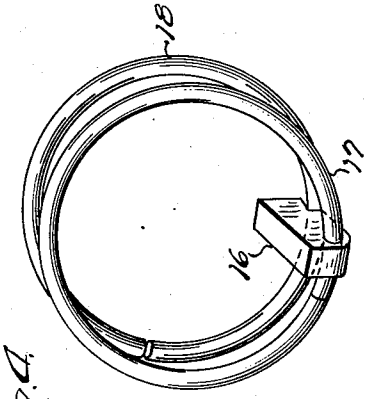

Fig. 4.

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WRITING INSTRUMENT

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Application November 12, 1948, Serial No. 59,587

2 Claims. (Cl. 120—42.03)

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My invention relates to a writing instrument having a retractable writing point and has for an object the provision of a simple, convenient and positive control for the positioning of the writing point with respect to the body of the writing instrument.

In accordance with my invention, the writing point may be moved to the projected position by manually pushing on a control element and may be moved to the retracted position by manually twisting the same control element.

Accordingly, it is another object of my invention to provide an improved push-twist control for a writing instrument having a retractable writing point.

My invention, together with further objects and advantages thereof, will best be understood by reference to the following description taken in connection with the accompanying drawings, and its scope will be pointed out in the appended claims.

In the drawings:

Figure 1 is a broken view of a ball point pen constructed in accordance with my invention with the outer body portion in cross section showing the writing point in its projected position;

Fig. 2 is a similar view of the same pen showing the writing point in the retracted position;

Fig. 3 is a cross-sectional view taken along line 3—3 of Fig. 1; and

Fig. 4 is a perspective view of a latch mechanism for the pen shown in Fig. 1.

Referring more specifically to the figures, a body member 1 comprising a barrel 2 and a tapered lower end 3 surrounds the main portion of a writing element 4 having a writing point 5. In the embodiment shown in the drawings, I have suggested a ball point writing element, but my invention is not limited to such an application. The writing element 4 comprises a removable cartridge and contains the usual ink reservoir and ink passageways communicating with the tip and ball of the instrument.

The writing element 4 is slidable within the body member 1 to a projected position shown in Fig. 1 and to a retracted position shown in Fig. 2. A spring 6 urges the writing element 4 toward its retracted position. In the embodiment shown, spring 6 is a compression spring seated on and located between a shoulder 6a on a sleeve 4a snugly fitted within the body member and a shoulder 6b on the writing element.

An actuating mechanism is employed to control the position of the writing element 4 with

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respect to the body member 1. The actuating mechanism includes a push rod 7 located above and axially abutting the writing element 4. The actuating mechanism also includes a shell 8, suitably connected to push rod 7 by pin 9, and a cap 10 engaging the shell 8 by friction fit and a pair of cooperating spun grooves 8a and 10a.

The body member 1 also includes a barrel extension 11 threadably engaged with the sleeve 4a and a centrally located sleeve 11a connected to the upper end of the extension 11 by cooperating spun grooves 11b and 11c on an integral flange 12. The sleeve 11a also includes a centrally located raised portion in the form of a cylinder 13 provided with a spiral groove 22.

The actuating mechanism is maintained in axial alignment with the body member 1 by virtue of sliding connection of cap 10 with the body member 1, sliding connection of the shell 8 with the barrel extension 11, and sliding connection of the push rod 7 with sleeve 11a.

As previously stated, the spring 6 urges the writing element 4 toward its retracted position. In the retracted position, a flange 15 at the end of the writing element 4 bears against the flange 12 thereby preventing further upward movement of the actuating mechanism and the writing element. This is clearly shown in Fig. 2.

When it is desired to move the writing element 4 to its projected position, the cap 10 need be only pushed downwardly with respect to the body member 1. Such movement will be transmitted to the shell 8, the push rod 7 and the writing element 4 as will be apparent in view of the mechanical interconnection of these parts previously described. When the writing instrument reaches its fully projected position, a latch 16 pivotally mounted on the shell 8 by means of a pivot ring 17 within a circumferential groove 17a will move inwardly under the influence of a split ring spring 18 within a circumferential groove 18a. An upper edge 19 of the latch 16 will then engage a shoulder 14 on the cylinder 13 which is fixed relative to the body member 1. The writing instrument will then be located and held by shoulder 14 in its projected position. It will be noted that the downward movement of the actuating mechanism is limited by the abutment of a flange 20 secured to the upper end of the push rod 7, with a flange 21 located on the upper end of the sleeve 11a.

One or more grooves 22 are cut in the cylinder 13. This groove is of sufficient radial depth and circumferential width to permit the passage of the latch 16 therethrough even when the latch

is in its inward or engaging position. When it is desired to release the locking action of the latch 16 and the shoulder 14, it is necessary only to twist the cap 10. This twisting movement is transmitted directly to the shell 8 and the latch 16. When the latch 16 becomes aligned with the lower end of the groove 22, the spring 6 will drive the writing element 4 and the actuating mechanism upwardly since such movement is no longer restrained by engagement of the latch 16 with the shoulder 14.

Preferably, the groove 22 is substantially out of axial alignment with the writing instrument. The action of such a spiral groove is that the latch 16, in moving through the groove 22, will be moved out of axial alignment with the lower end of the groove 22. Therefore, if the cap 10 is again moved downwardly to expose the writing point 5, the latch 16 will engage shoulder 14 and maintain the writing element 4 in its projected position rather than slipping through groove 22 as would be the case if the groove were formed in axial alignment with the instrument.

It will be obvious to those skilled in the art that when the cap 10 is moved downwardly to project the writing element, the spring 18 will yield and permit outward pivotal movement of the latch 16 around the pivot ring 17 in order that the latch 16 may move downwardly past the cylinder 13. The inner surface of the latch 16 is, of course, smoothly tapered in order that the latch may be moved smoothly outwardly upon engagement of that surface with the upper edge of the cylinder 13.

It will be noted that project-retract mechanism herein described permits the writing instrument to be axially separated in a central portion for the removal and replacement of the writing element 4, when and if required. This separation may be effected by projecting the writing element as above described and then carefully twisting the cap until the retracting position is reached. Travel to an intermediate retract position is permitted manually and when the latch 16 is located in the groove 22, the cap 10 is further twisted to unscrew the barrel extension 11 from the sleeve 4*a*. The latch 16 in the groove 22 permits the cap 10 and the extension 11 to be turned together for the unscrewing operation. Then the cap and actuating mechanism may be separated and the writing element removed for replacement. The two parts may be reassembled in the same manner.

While I have shown and described a particular embodiment of my invention, it will be obvious to those skilled in the art that changes and modifications may be made without departing from my invention in its broader aspects, and I, therefore, aim in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A writing instrument comprising a first body member including a barrel having a forward writing point end and an opening therethrough and including a collar on the rearward end thereof, a writing unit including a writing point located substantially within said barrel and slidable therein to a point retracted position and to a point projected position, a second body member slidably mounted on a rearward end of said first body member for normal movement of said unit to point projecting position, said collar being interposed between said first and second body members and having a forward latch-engaging surface, a first spring urging said writing unit and said second body member rearwardly toward point-retracting position, a latch pivotally secured to said second body member having a rearward collar-engaging surface for retaining said writing unit and said second body member in point-projected position, a second spring urging said latch inwardly toward collar-engaging position, said latch having a forwardly inclined surface permitting the latch to ride over said collar upon forward movement of said second body member with respect to said first body member, means defining a continuous groove in said collar providing a passageway for said latch and permitting disengagement of said rearward surface of said latch from the forward surface of said collar, said first and second body members being also mounted in axially rotatable relationship whereby to move said latch into registry with said passageway.

2. The writing instrument recited in claim 1 wherein said groove in said collar is substantially helical in shape.

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