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WRITING INSTRUMENT WITH RETRACTABLE POINT

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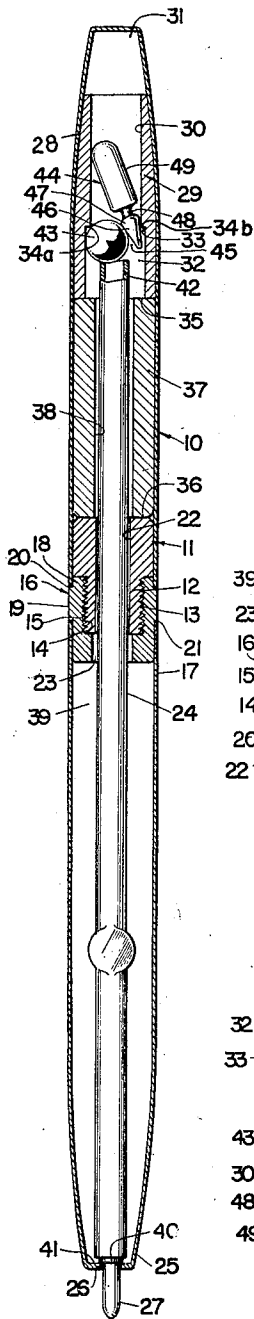


FIG. 1.

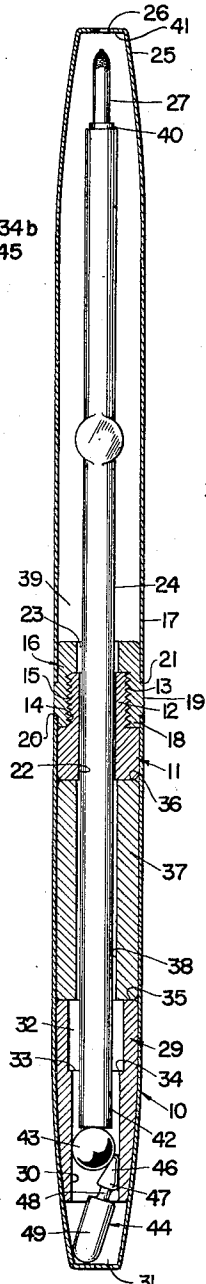


FIG. 2.

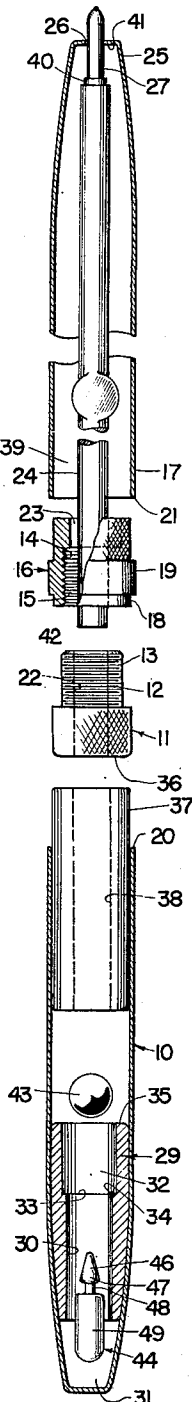


FIG. 3.

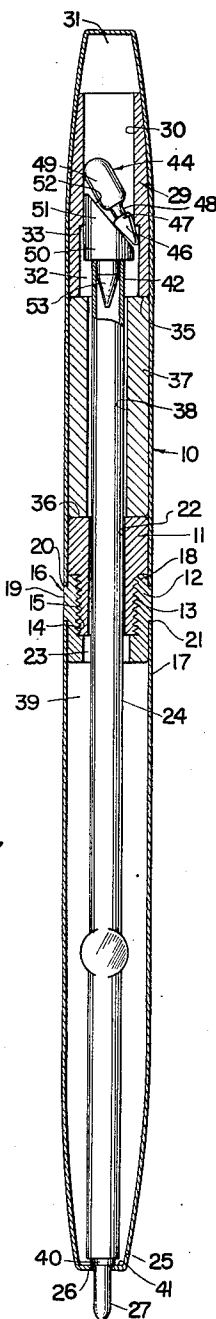


FIG. 4.

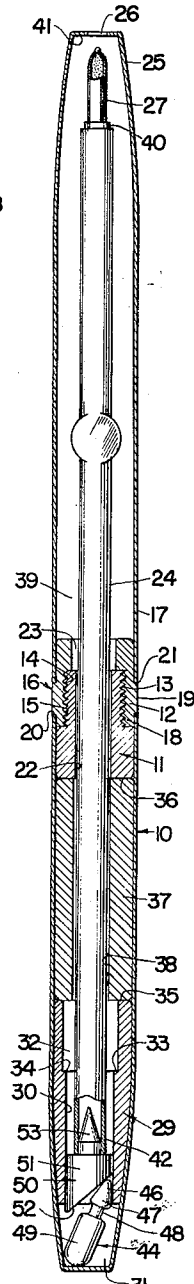


FIG. 5.

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WRITING INSTRUMENT WITH RETRACTABLE POINT

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This invention relates to writing implements—more particularly to retractable pens and pencils.

In conventional instruments of this category having a longitudinally movable stem or other support for a writing point, mechanisms are employed which are manually manipulated to cause a positive operative projection or retraction of the point. Aside from the fact that positive manipulative efforts are required to be performed upon special actuating elements, the mechanisms employed are necessarily intricate, require careful and skillful assembling operations and are correspondingly costly to produce.

It is primarily within the contemplation of my invention to provide a construction of writing instrument with a minimum of components, and in which the use of manually manipulated elements for projecting and retracting the writing point is eliminated. And in this aspect of my invention it is my objective to enable the point projecting and retracting operations to be performed merely by reversing the position of the instrument from the operative writing position to the retracted position, and vice versa.

Another object of my invention is to enable the writing point to be held locked in its writing position without manipulating any locking element, but merely by holding the instrument in its normal writing position.

A further object of this invention is to provide a structure with readily fabricated parts, and that can be readily assembled without the use of skilled labor, or special tools or jigs.

Other objects, features and advantages will appear from the drawings and the description hereinafter given.

In the drawings,

Figure 1 is an enlarged longitudinal sectional view of an embodiment of my invention, the illustrated pen being shown in its operative writing position.

Figure 2 is a part-sectional, part-elevational view of the device of Figure 1, shown inverted, in its retracted inoperative position.

Figure 3 is an exploded fragmentary view of the components of the device of Figure 2.

Figure 4 is an enlarged longitudinal sectional view of another embodiment of my invention, shown in its operative writing position.

Figure 5 is a view substantially like Figure 4 but showing the device inverted, in its retracted inoperative position.

In the form of my invention illustrated in Figures 1 to 3, the rear outer casing 10 is force-fitted over the centrally-apertured point-carrier guide member 11, the latter having a forwardly extending boss 12 with the externally threaded portion 13 extending into and in threaded engagement with the internally threaded wall 14 of the central cavity 15 of the generally cylindrical connector 16, the latter extending into the rear end of the forward casing 17. In the embodiment shown, said connector is force-fitted into said casing 17, the annular wall 18 extending rearwardly and enveloping said boss

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12, the intermediate thickened portion 19 being proportioned to extend between the ends 20 and 21 of the respective casings 10 and 17. The internal passageway 22 of said guide 11 communicates with the passageway 23 of connector 16, said passageway being proportioned to accommodate the cartridge stem 24 and permit the latter's longitudinal movement relative to said casings 10 and 17.

The front portion 25 of casing 17 contains therein the axial aperture 26, proportioned to permit the longitudinal movement therethrough of the elongated writing tip 27, carried by said stem 24, during the latter's operative movement to be hereinafter described—whereby said tip may be operatively moved from its writing position of Fig. 1 to its retracted position of Fig. 2.

The rear portion 28 of said rear casing 10 contains the hollow sleeve 29 fixedly supported in place, said sleeve having an open-ended passageway 30 communicating with the rear well 31 of casing 10 and the somewhat larger open-ended passageway 32. The relative proportions of passageways 30 and 32 are such that a narrow annular shoulder 33 is formed therebetween, the annular internal edge portion 34 of which serves the important function of a jamming ridge to hold said stem 24 in its forward limiting position and said tip 27 in its projected writing position, as will more clearly hereinafter appear.

Disposed between and in abutting engagement with the opposing ends 35 and 36 of said sleeve 29 and guide 11, respectively, is the hollow cylindrical spacer 37, the central passageway 38 of which is in communication with passageway 32 and the interior chamber 39 of the forward casing 17. The said stem 24 is proportioned for longitudinal movement through said passageway 38, as well as through said other passageways, so that it may freely move—upon a change of the instrument's positions between that of Figure 1 and that of Figure 2—to said stem's two limiting positions. In the operative position (Fig. 1), the front collar 40 is in abutment with the front wall 41; and in the inoperative or retracted position (Fig. 2), the tip portion 27 is completely contained within the casing; while the rear portion 42 of stem 24 is disposed within the passageway 30. Said rear portion is provided with a rear stop member which, in the form being described, is separable from the stem. The form of stop member illustrated is ball 43 upon which the rear portion of the stem is resting, in retracted position, the ball in turn resting upon jamming pin 44 supported within well 31.

The said ball 43 is proportioned for entry within passageway 30 when the pen is inverted, as shown in Fig. 2; and when the pen is in its operative position shown in Fig. 1, the ball is supported by the rear end portion 42 of hollow stem 24. In said latter position, the ball is spaced from the annular edge portion or ridge 34, to provide an opening 45 for partial entry of said jamming pin 44, in a manner to be hereinafter described.

Said jamming pin 44 comprises a substantially conical head 46, its maximum width being at rear portion 47—said portion curving rearwardly and inwardly to join the narrow neck 48 connected to the rear body portion 49—the latter being preferably of elongated configuration and of greater weight than said head 46. The width of said head at portion 47 is greater than that of said opening 45 when the ball is disposed off at one side, against ridge portion 34a, as shown in Fig. 1. When said head is disposed in said opening 45, as illustrated in said latter figure, it is in engagement with ridge portion 34b and the ball 43, and stopped from further entry through the said opening 45. The ball 43 and pin 44 are thus jammed together against ridge 34, to hold stem 24 against rearward movement. This is the operative one of the

two limiting positions of the stem—the position in which the tip 27 is in its protruding writing position.

Because of the jamming action above described, the stem is held locked in its writing position; and operative writing pressure upon tip 27 will not dislodge the stem and the tip from their operative position.

The operation of bringing the said pen components to their writing position thus entails the simple step of inverting the pen from the inoperative position of Fig. 2 to that of Fig. 1. The stem 24 gravitationally slides down until collar engages the wall 41, the ball 43 drops upon the rear end 42 of the stem, and the jamming pin 44 drops down until the head 46 reaches the jamming position above described. It should be noted that the length of pin 44 is sufficiently greater than the diameter of passageway 30 to insure its remaining at all times with head 46 in the foremost position. An it is also to be observed that the weight of rear body portion 49 serves to gravitationally force the head 46 into said jamming position.

To retract the tip 27, the pen is brought to the position of Fig. 2. The weighted body portion 49 will then cause the pin 44 to drop back from its jamming position into the well 31; and the ball 43 and stem 24 will correspondingly move downwardly to the retracted limiting position illustrated—the relative proportions of the pin, ball and stem being such that the tip 27 will be entirely contained within the casing 17, as aforesaid.

Both operations are thus performed without the use of any manually manipulated locking and releasable mechanisms which characterize conventional retractable writing instruments. Moreover, the components can be readily assembled without the usual fitting operations and without the need to use special assembling jigs and tools. As can be seen from Fig. 3, the assembling operation of the rear portion simply consists of successively dropping in the pin 44 and ball 43, inserting the spacer 37 and pressing the guide 11 into place. The front portion is assembled by pressing the connector 16 into place. Thereafter the cartridge stem 24 is inserted in the usual way, and the forward and rear portions screwed together.

The modified form of my invention illustrated in Figs. 4 and 5 contains substantially the same components, except that in place of the ball 43 I employ the cam member 50 comprising the cylindrical body portion 51, the rear inclined cam surface 52 and the short bottom shaft 53 disposed within the hollow rear portion 42 of stem 24.

When the pen is turned to the operative position shown in Fig. 4, the pin 44 drops upon cam surface 52, the head 46 sliding down until it is engaged by the ridge 34, whereupon no further upward movement is possible. Hence the point carrying stem is held locked in its operative writing position. Upon a reversal of the pen to the position of Fig. 5, the pin 44 drops into well 31, as in the first case described, and the cam member 50 slidably moves down until stopped by the pin—the stem gravitationally moving down to its retracted position.

In the above description, the invention has been disclosed merely by way of example and in preferred man-

ner; but obviously many variations and modifications may be made therein. It is to be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except insofar as such limitations are specified in the appended claims.

I claim:

1. In a writing instrument, a hollow casing, an elongated cartridge stem disposed within said casing and operatively movable between two limiting positions, one being a rear retracted inoperative position and the other a forward operative writing position, an apertured portion at the forward end of the casing and communicating with the interior thereof, said stem having at the front thereof, a terminal portion with a writing tip operatively movable through said apertured portion upon an operative movement of said stem, said casing having an internal annular ridge portion spaced forwardly from the rearmost portion of said casing, said ridge dividing said casing into a rear passageway and a relatively wider front passageway, a stop member at the rear of and movable with said stem, said stop member having a rear end surface generally inclined toward said ridge, a jamming member comprising a conical front end portion and a rear body portion connected therewith by means of a narrow neck portion joining the maximum width at the base of the head portion to the rear body portion, said conical front portion being engageable with the inclined surface of said stop member to tilt the body portion and move the head portion along said inclined rear end surface by the free falling of said jamming member and the consequent downward movement of the conical front end portion of said jamming member below said ridge to define a jamming position with the stop member bearing against said jamming member and both of said members bearing against opposite sides of said ridge, and said stem being loosely mounted within said casing whereby it is gravitationally movable between its said two limiting positions upon an operative movement of said writing instrument between its vertical operative writing position and an inverted inoperative position.

2. In a writing instrument, the combination according to claim 1 wherein said stop member is a spherical member in engagement with the rear end of said stem.

3. In a writing instrument, the combination according to claim 1 wherein said stop member is provided with a substantially flat inclined rear cam surface with which the head of said pin is in slidable engagement.

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