Sept. 9, 1947. R. W. RANDOLPH 2,427,069

WRITING INSTRUMENT

Filed Sept. 28, 1945

Fig. 1.

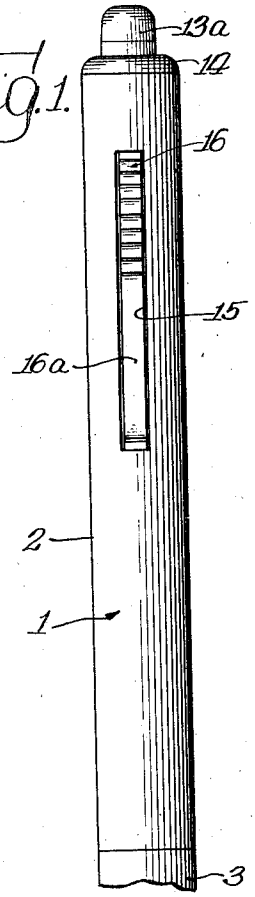


Fig. 2.

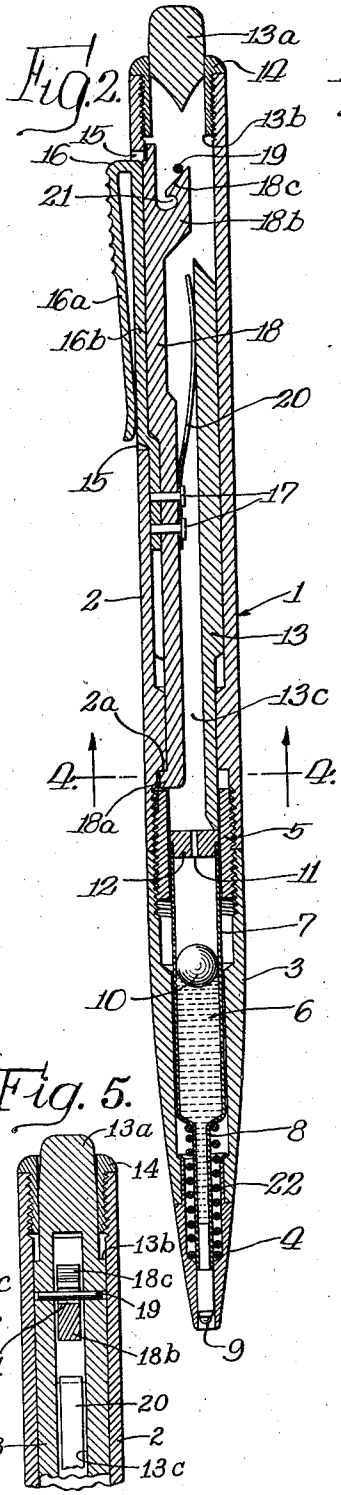


Fig. 3.

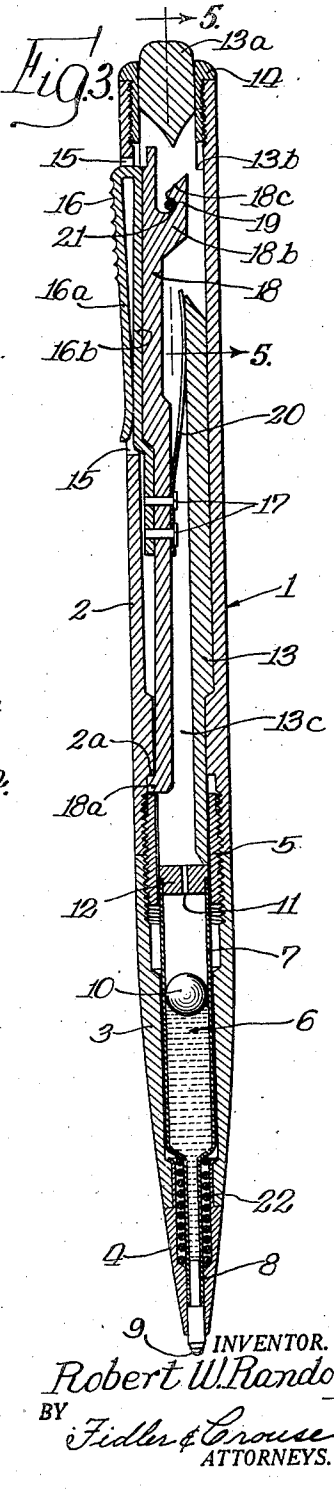


Fig. 4.

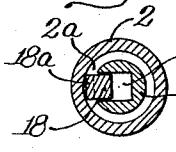


Fig. 5.

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WRITING INSTRUMENT

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14 Claims. (Cl. 120—49)

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This invention relates generally to writing instruments of the propel-repel type and, more particularly, to ball-point writing instruments; and it has to do especially with a device of that character wherein the writing point is propellable from a retracted position within the holder to a projected or writing position by means of a finger-operated pushbutton, and is spring-retractable by manually releasing a latch adapted normally for holding the writing point in its projected position.

One of the primary objects of the invention is to provide an instrument of the kind above indicated which is simple and rugged and whereof the component parts are well adapted for enconomical production and assembly.

Another object is to devise a writing instrument of the propel-repel type having a pocket clip so coordinated with the propel-repel mechanism that the clip is usable only when the writing point is in its retracted position, the clip being rendered unusable when the writing point is in its projected or writing position, thereby largely ensuring that the user will remember to release the latch and thus retract the writing point before returning the instrument to his pocket.

In ball-point writing instruments, it is desirable and feasible to dispense with the removable cap ordinarily provided on fountain pens; but to do so it is practically necessary, at least so far as pocket models are concerned, to provide for retracting the writing point into the holder because there is always a modicum of ink on the ball point which is apt to soil the clothing unless the point is retracted before putting the instrument in one's pocket. While most people are likely to remember, there are those who may habitually forget to retract the writing point, and for their benefit the present invention affords an arrangement wherein the pocket clip is caused to recede into the holder or barrel of the instrument whenever the pushbutton is depressed to propel the writing point to writing position—thereby so displacing the free end of the clip that it cannot be made to grasp the edge of a pocket frontpiece unless and until the latch is released and the writing point thereby retracted. While this expedient does not actually prevent a person putting the instrument in his pocket without first retracting the writing point, it has, nevertheless, much the effect of a positive preventative because one soon learns by experience that the pocket clip will not function if he neglects to retract the writing point; and, what is more, the manual action required to bring about retraction is of a kind which lends itself to quick habit formation.

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The structure of my invention is characterized by marked mechanical simplicity, ease of assembly and absence of innate design weakness tending toward shortened life or operational failure resulting from wear or loss of adjustment; and it is further characterized in that it is particularly well adapted for low cost mass production without sacrifice of quality.

A preferred embodiment of my invention is shown in the accompanying drawing, but it is to be understood that the instrument illustrated is only one of a variety of forms which the invention may assume.

In the drawing:

Fig. 1 is a fragmentary elevational view of the rear end portion of a ball-point writing instrument embodying my invention;

Fig. 2 is a longitudinal vertical sectional view of a complete instrument and showing the ball point and the propel-repel mechanism in their retracted positions;

Fig. 3 is a longitudinal sectional view identical with Fig. 2 except that the ball point is shown in its projected or writing position and the propel-repel mechanism in the corresponding operational state;

Fig. 4 is a transverse sectional view taken along line 4—4 of Fig. 2; and

Fig. 5 is a fragmentary sectional view taken along line 5—5 of Fig. 3.

The device shown comprises an elongate holder 1 consisting of a tubular rear portion 2, an externally tapered tubular intermediate portion 3 and an externally tapered tip member 4. Portions 2 and 3 are internally threaded at their adjoining ends and detachably secured together by means of an externally threaded sleeve 5. Portions 2 and 3 are generally made of a suitable plastic material, while tip member 4 preferably is made of metal and permanently secured to the front end of holder portion 3 in any suitable manner such as that illustrated.

Disposed within the front portion of the holder and reciprocable lengthwise thereof is a ball-and-cartridge unit 6 comprising a cylindrical ink reservoir 7, an ink feed tube 8 and a ball point 9. The latter constitutes the writing point of the instrument and is secured to the front end of the feed tube in such manner that it is capable of rotation while writing. Reservoir 7 and feed tube 8 are filled with a paste-like ink which, under normal conditions, does not flow past ball

point 9 but is fed thereto as the ball rotates upon the writing surface.

For the purpose of exerting a slight pressure on the ink a relatively large metal ball 10 is mounted in the reservoir 7 at the back of the ink supply. This ball is of such diameter as to afford a close running fit in the reservoir and serves additionally as a sealing means to prevent ink from flowing out rearwardly through vent opening 11 in plug 12. The latter functions as a closure for the back end of the reservoir and fits freely in the bore of sleeve 5. The coil spring 22 surrounding feed tube 8 continuously urges ball-and-cartridge unit 6 toward its retracted position, in which it is shown in Fig. 2. Unit 6 is movable forwardly against the pressure of spring 22 to the projected position in which it is shown in Fig. 3 and wherein ball point 9 is disposed exteriorly of the holder for engagement with the writing surface. The bore of tip member 4 preferably affords a nice running fit for the feed tube.

The ball-and-cartridge unit 6 can be removed for replacement as a unit by unscrewing holder portion 3 from sleeve 5, the thread of the latter preferably being cemented to barrel portion 2 so that in unscrewing portion 3 sleeve 5 will remain attached to holder portion 2.

Mounted within and extending lengthwise of the holder and abutting the back face of plug 12 of ball-and-cartridge unit 6 is an elongate plunger 13, the back end 13*a* of which projects from the back end of the holder to form a finger-operated pushbutton. Upon said pushbutton being depressed, the plunger is propelled forwardly and carries with it the ball-and-cartridge unit, thus causing the ball point to be moved from the retracted position in which it is shown in Fig. 2 to the projected position in which it is shown in Fig. 3. A screw bushing 14 in the back end of the holder is adapted to be engaged by a shoulder 13*b* on plunger 13 to limit the extent of retraction of the latter.

It is, of course, necessary to provide some means for holding the ball-and-cartridge unit in its forward position while the instrument is in use, together with suitable means for releasing the same when it is desired to retract the writing point. Such provision constitutes one of the features of the present invention and will now be described.

Holder portion 2 has an elongate, lengthwise extending slot-like opening 15 in which is positioned a pocket clip 16 consisting of a long strip of spring metal folded back on itself to form a spring arm 16*a* and a longer arm 16*b* which is secured by means of rivets 17 to an elongate latch bar 18.

Bar 18 is bent at its forward end to form a laterally extending toe 18*a* which is loosely held between the back end of sleeve 5 and a shoulder 2*a* formed on holder portion 2 to provide a fulcrum about which the free end of said bar is rotatable through a small arc in the plane of the drawing, as will be seen upon comparison of Figs. 2 and 3.

Plunger 13 is grooved lengthwise, as indicated at 13*c* (Fig. 4) to accommodate bar 18 and, extending crosswise of said groove, is a pin 19 which is carried by the plunger. A leaf spring 20, secured at one end to bar 18 by means of rivets 17, bears against the bottom of groove 13*c* and functions continuously to urge the free end of bar 18 toward its outward position as exhibited in Fig. 2.

Integral with bar 18 is a projection 18*b* on which is formed an inclined surface 18*c* terminating at one end in a hook-like recess or notch 21 designed to latchingly engage pin 19.

With the writing point retracted and the latching mechanism in the unlatched state, as portrayed in Fig. 2, a forward movement of plunger 13 caused by depressing push-button 13*a* results in moving pin 19 forwardly against and along inclined surface 18*c* and thence into engagement with notch 21 as depicted in Fig. 3. The free end of bar 18, together with pocket clip 16, is moved inwardly about the pivotal center of said bar by reason of the cam-like action of pin 19 on inclined surface 18*c*.

When bar 18 assumes the position in which it is shown in Fig. 2 (which position I term the "active clipping position") the pocket clip 16 is disposed sufficiently to the outside of the holder 1 so that it is capable of engaging the frontpiece of a pocket in the manner common to pocket clips of this general character. On the other hand, when bar 18 is in its retracted position, as depicted in Fig. 3 (which position I term the "inactive non-clipping position"), the free end of spring arm 16*a* is so far retracted into the holder that the clip is not readily capable of engaging a pocket frontpiece. This will be apparent from inspection of Fig. 3.

The latch is released and the writing point freed for retraction by simply pressing inwardly on the pocket clip 16. This causes pin 19 to become disengaged from notch 21, whereupon the ball-and-cartridge unit, together with the plunger, are moved rearwardly by spring 22.

By making bar 18 long enough so that its pivotal center is situated a considerable distance forward of the pocket clip, it becomes possible to obtain a substantial movement of the forward end of spring arm 16*a* without entailing an excessive amount of movement of the upper end of the bar. Manifestly, it would be possible and feasible within the scope of this invention to substitute for the pivoted bar 18 a latch member mounted to move bodily instead of rotationally. Also any suitable means such as a separate button element may be employed for unlatching the bar 18 for retraction of unit 6.

It will be apparent from the illustration that all of the component parts of the emodiment shown are well adapted for economical volume production and that the assembling operations are relatively simple. Moreover, it will be self-evident that all of the parts can easily be made so rugged that there is little likelihood of an instrument so constructed getting out of order.

I claim:

1. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, manually operable means for moving said plunger forwardly, and manually releasable latch means for holding said plunger and writing point in their forward positions until released, said latch means comprising a bar extending lengthwise of said holder and disposed principally within said

holder, one end of said bar being pivotally anchored to permit the free end thereof to rotate radially of the longitudinal axis of the holder, and means carried by said bar for latchingly cooperating with said plunger whereby said bar is moved inwardly of the holder and said plunger is latched in its forward position in response to a forward movement of said plunger, said bar being operative when rotated about its pivot inwardly of the holder to unlatch said plunger, said holder having a side opening through which said bar is accessible for manual operation to unlatch the plunger.

2. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore, and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, manually operable means for moving said plunger forwardly, and manually releasable latch means for holding said plunger and writing point in their forward position until released, said latch means comprising a bar extending lengthwise of said holder and disposed principally within said holder, one end of said bar being pivotally anchored to permit the free end thereof to rotate radially of the longitudinal axis of the holder, and means carried by said bar for latchingly cooperating with said plunger whereby said bar is moved inwardly of the holder and said plunger is latched in its forward position in response to a forward movement of said plunger, said bar being operative when rotated about its pivot inwardly of the holder to unlatch said plunger, said holder having an elongate slot extending lengthwise thereof and registering with the free end portion of said bar, and a pocket clip attached to said bar and projecting outwardly therefrom through said slot, said clip being so disposed outwardly of said holder that it is usable as a pocket gripping means when said writing point is retracted but is withdrawn into the holder to such an extent that it is unusable as a pocket gripping means when the writing point is in its projected position, said bar being rotatable about its pivot to unlatch the plunger by depressing said pocket clip inwardly of the holder.

3. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, said plunger having a pushbutton portion projecting out of the rear end of said holder and manually operable for propelling the plunger forwardly, and manually releasable latch means for holding said plunger and writing point in their forward positions until released, said latch means comprising a bar extending lengthwise of said holder and disposed principally within said holder, one end of said bar being pivotally anchored to permit the

free end thereof to rotate radially of the longitudinal axis of the holder, and means carried by said bar for latchingly cooperating with said plunger whereby said bar is moved inwardly of the holder and said plunger is latched in its forward position in response to a forward movement of said plunger, said bar being operative, when rotated about its pivot inwardly of the holder, to unlatch said plunger, said holder having a side opening through which said bar is accessible for manual operation to unlatch the plunger.

4. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, manually operable means for moving said plunger forwardly, and manually releasable latching means for holding said plunger and writing point in their forward positions until released, said latch means comprising a bar extending lengthwise of said holder and disposed principally within said holder, one end of said bar being pivotally anchored to permit the free end thereof to rotate radially of the longitudinal axis of the holder, a laterally extending pin carried by said holder, said bar having an inclined surface and a hook, said inclined surface being adapted to cooperate with said pin to rotate said bar inwardly of the holder when said plunger is propelled forwardly, said hook being operative to engage said pin and thus latch said plunger in its forward position while at the same time holding said bar in an inward position, said holder having a side opening through which said bar is accessible for manual operation, said bar being manually movable inwardly to disengage said hook from said pin, thus permitting said plunger and writing point to be retracted by said spring means.

5. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, said plunger having a pushbutton portion projecting out of the rear end of said holder and manually operable for propelling the plunger forwardly, and manually releasable latch means for holding said plunger and writing point in their forward position until released, said latch means comprising a bar extending lengthwise of said holder and disposed principally within said holder, one end of said bar being pivotally anchored to permit the free end thereof to rotate radially of the longitudinal axis of the holder, and means carried by said bar for latchingly cooperating with said plunger whereby said bar is moved inwardly of the holder and said plunger is latched in its forward position in response to a forward movement of said plunger, said bar being operative when rotated

about its pivot inwardly of the holder to unlatch said plunger, spring means continuously urging the free end of said bar outwardly of the holder, said holder having a side opening through which said bar is accessible for manual operation to unlatch the plunger.

6. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, said plunger having a pushbutton portion projecting out of the rear end of said holder and manually operable for propelling the plunger forwardly, said holder having an elongate slot-like opening in its side, a member mounted in said holder in registration with said opening and having a pocket-clip portion extending exteriorly of the holder, spring means continuously urging said member outwardly of the holder and thus tending to maintain the pocket-clip portion in a position outside the holder wherein it is usable as a pocket clip, and means carried by said member for latchingly cooperating with said plunger whereby said member is moved inwardly of the holder and said plunger is latched in its forward position in response to a forward movement of said plunger, said member being operative, upon being moved inwardly of the holder, to unlatch said plunger, said pocket-clip portion being retracted into said holder, when said plunger is latched in its forward position, to such an extent that it is unusable as a pocket clip.

7. In a writing instrument, an elongate, hollow holder having a bore opening at its front end, a writing point housed in said holder and adapted to be propelled outwardly into writing position through the front end of said bore and, alternately, retracted through said front end into the holder and thus out of writing position, a plunger mounted within and reciprocable lengthwise of said holder and operative, when moved forwardly, to propel said writing point outwardly of the holder, spring means for retracting said plunger and writing point, said plunger having a pushbutton portion projecting out of the rear end of said holder and manually operable for propelling the plunger forwardly, said holder having an elongate slot-like opening in its side, a member mounted in said holder in registration with said opening and having a pocket-clip portion extending exteriorly of the holder, spring means continuously urging said member outwardly of the holder and thus tending to maintain the pocket-clip portion in a position outside the holder wherein it is usable as a pocket clip, said member having a surface inclined at an acute angle to the path of movement of said plunger, said plunger having means operative to engage said inclined surface and to coact therewith during forward movement of the plunger to move said member, together with said clip, inwardly of the holder, said member having a recess for latchingly engaging said means whereby to hold said plunger in its forward position, said means being disengageable from said recess to release said plunger by manually depressing said pocket clip toward the interior of the holder, said pocket clip being so far retracted into said holder, when said plunger is in its forward position, that it is unusable as a pocket clip.

8. In a ball-point writing instrument, an elongate, hollow holder having a bore opening at its front end, a ball-and-cartridge unit disposed within and reciprocable lengthwise of said holder, said unit comprising an elongate ink reservoir, a feed tube at the front end of said reservoir and a ball point secured to the front end of said feed tube, said unit being propellable forwardly to project said writing point out of the front end of said bore and repellable backwardly to retract said ball point into the holder, a plunger disposed within said holder at the rear of said unit and having a portion projecting out of the rear end of the holder to form a manually operable pushbutton which, upon being depressed, propels said plunger and unit forwardly lengthwise of said holder, said holder having an elongate, slot-like opening in its side and extending lengthwise thereof, said plunger having a lengthwise slot registering with said opening, an elongate bar disposed in said slot and pivotally anchored at a point substantially forward of said opening, said bar having a free end portion forming a closure for said opening and having a spring finger at its exterior side and extending lengthwise of the holder, said spring finger being situated sufficiently to the exterior of said holder, when said plunger and unit are retracted, to render it usable as a pocket clip, a pin carried by said plunger and extending across said slot, said bar having a notch for latchingly engaging said pin to hold said plunger and unit in their forward positions, said bar having an inclined surface which coacts with said pin, during forward movement of the latter, to rotate said bar about its pivot inwardly of the holder, thereby causing said spring finger to recede into said holder to a position wherein it is unusable as a pocket clip, a spring continuously urging said unit and plunger backwardly, and a spring biasing said bar outwardly of the holder, said pin being disengageable from said notch by manually depressing said spring finger, thereby moving said arm inwardly of the holder.

9. A ball-point writing instrument comprising a barrel having an open forward end, a writing unit slidably mounted in said barrel and including a ball writing point at its forward end and adapted to be propelled and retracted through the adjacent forward end of said barrel, spring means constantly urging said unit toward retracted position wherein said writing point is concealed in said barrel, means for propelling said unit, releasable means including a latch member releasably engageable with said propelling means for holding said unit in propelled position when moved thereto by said propelling means, and means including a pocket clip carried by said latch member and depressible for disengaging said latch member from said propelling means to permit said spring means to move said unit into retracted position.

10. A ball-point writing instrument comprising a barrel, a writing unit slidably mounted in said barrel and including a ball writing point at its forward end and adapted to be propelled and retracted through the adjacent forward end of said barrel, spring means constantly urging said unit toward retracted position wherein said writing point is concealed in said barrel, means including a push button at the rear end of said barrel for propelling said unit, a spring latch element releasably engageable with said propel-

ling means for holding said unit in propelled position when moved thereto by said propelling means, a pocket clip mounted for movement between operative clipping and inoperative non-clipping positions, and means operatively connecting said latch element and said clip for moving said clip to inoperative position when said unit is propelled and for releasing said latch upon manual depression of said clip element from inoperative position.

11. A ball-point writing instrument comprising a barrel, a writing unit slidably mounted in said barrel and including a ball writing point at its forward end and adapted to be propelled and retracted through the adjacent forward end of said barrel, spring means constantly urging said unit toward retracted position wherein said writing point is concealed in said barrel, a pocket clip movable relatively to said barrel between an active clipping position and an inactive, non-clipping position, spring means constantly urging said clip toward active position, means for propelling said unit and operative to move said clip to inactive position when said unit is propelled, and means for holdng said unit in propelled position when it has been moved thereto by said propelling means and releasable upon manual actuation of said clip for permitting said first spring means to move said unit to retracted position and said second spring means to move said clip to active position.

12. A ball-point writing instrument comprising a barrel, a writing unit slidably mounted in said barrel and including a ball writing point at its forward end and adapted to be propelled and retracted through the adjacent forward end of said barrel, spring means constantly urging said unit toward retracted position wherein said writing point is concealed in said barrel, means for propelling said unit, a latch member movable between a position engaging said propelling means for releasably holding said unit in propelled position and a position disengaged therefrom, a pocket clip carried by said latch member and movable thereby between an inoperative position within said barrel when said latch member is engaged and an operative position projecting from said barrel when said latch member is disengaged, spring means constantly urging said latch member toward disengaged position, and means actuated by said propelling means for moving said latch member into engaged position.

13. A ball-point writing instrument comprising a barrel, a writing unit slidably mounted in said barrel and including a ball writing point at its forward end and adapted to be propelled and retracted through the adjacent forward end of said barrel, spring means constantly urging said unit toward retracted position wherein said writing point is concealed in said barrel, means for propelling said unit, a latch member pivoted in said barrel for movement between an engaged position releasably holding said unit in propelled position and a disengaged position, spring means constantly urging said latch member toward disengaged position, cam means actuated by said propelling means for moving said latch member into engaged position upon propel movement of said propelling means, and a pocket clip carried by said latch member for movement between an active, clipping position when said latch member is in disengaged position and an inactive, non-clipping position when said latch member is in engaged position, said clip being depressible from its inactive position to disengage said latch member and permit said first spring means to move said unit into retracted position.

14. A ball-point writing instrument comprising a barrel, a writing unit slidably mounted in said barrel and including a ball writing point at its forward end and adapted to be propelled and retracted through the adjacent forward end of said barrel, and means for feeding ink from said reservoir to said ball writing point, spring means constantly urging said unit toward retracted position wherein said writing point is concealed in said barrel, means for propelling said unit, means actuated by said propelling means for releasably holding said unit in propelled position, a pocket clip member, means connecting said clip member to said holding means for movement therewith between an active, clipping position when said holding means is disengaged and an inactive, non-clipping position when said holding means is engaged(said clip member being manually depressible from inactive position to release said holding means, and means constantly urging said clip member toward active position.

ROBERT W. RANDOLPH.

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