

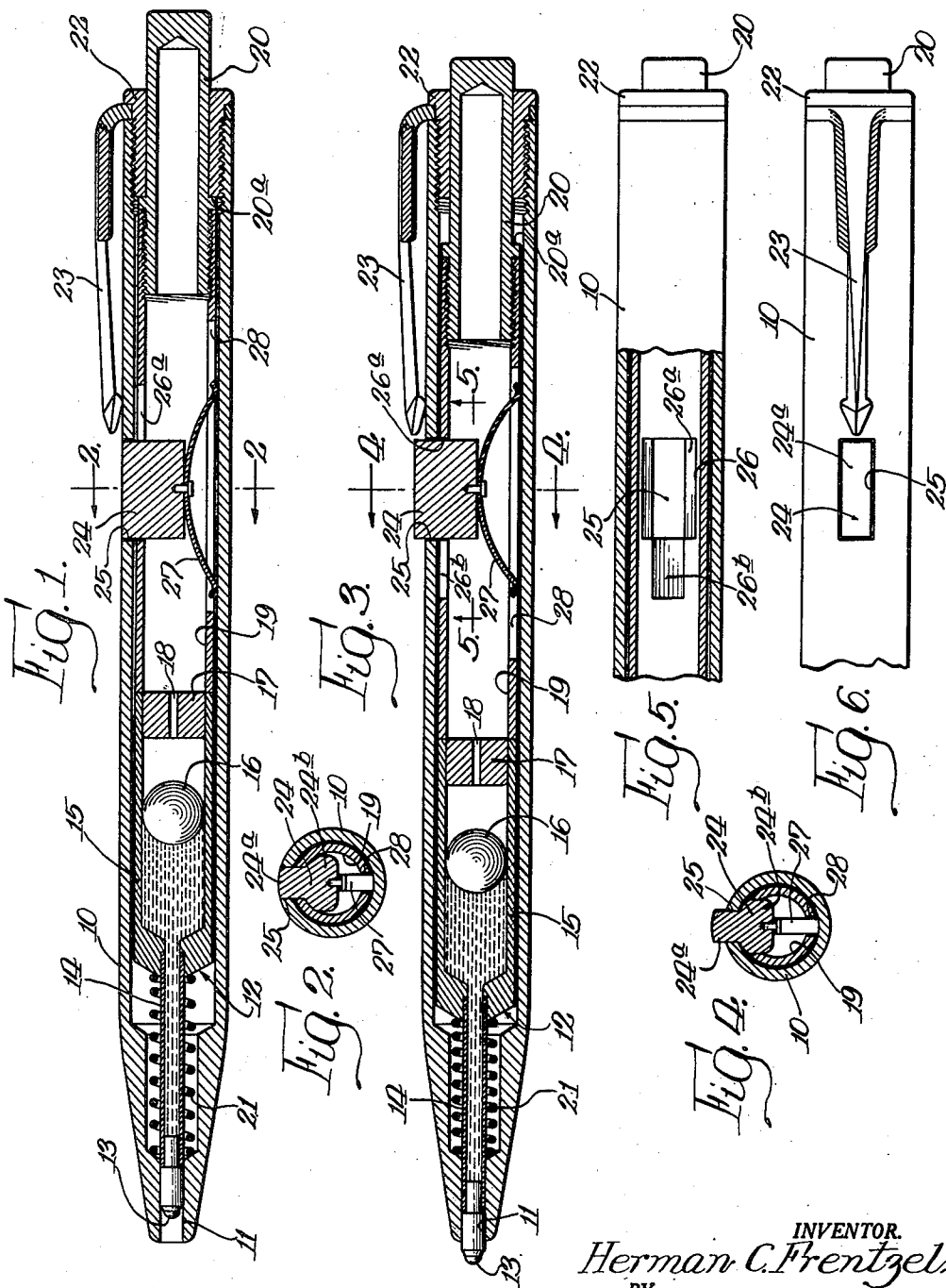
Jan. 1, 1952

H. C. FRENTZEL

2,580,753

BALL POINT FOUNTAIN PEN

Filed Nov. 13, 1945



INVENTOR.
Herman C. Frenz
BY *Fidler & Crouse*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,580,753

BALL POINT FOUNTAIN PEN

Herman C. Frentzel, Milwaukee, Wis., assignor to
The Parker Pen Company, Janesville, Wis., a
corporation of Wisconsin

Application November 13, 1945, Serial No. 627,996

9 Claims. (Cl. 120—42.03)

1

This invention relates to writing instruments of the kind wherein the writing point is propellable out of and retractable back into the holder, and it has to do especially with instruments of that character which are pushbutton operated. More particularly, the invention pertains to a ball-point writing instrument wherein the ball is retracted into the holder when not in use and is propellable out of the holder into writing position by depressing a pushbutton.

Because the ink in a ball-point writing instrument will not leak out, it is feasible to carry such an instrument point down and to dispense with the detachable cap which ordinarily is supplied with pocket-type fountain pens. However, there usually is on the ball point of such an instrument a modicum of ink which could soil the clothing, and for that reason it practically is necessary, if the cap is to be dispensed with, to provide for retracting the point into the barrel before returning the instrument to the pocket.

As a rule, the owner of a ball-point writing instrument will remember to retract the point before pocketing the instrument, but there are some users who occasionally may be inclined to forget, and it is one of the primary objects of this invention to discourage such forgetfulness. To that end the present invention provides a propel-retract mechanism which substantially prevents the writing instrument being clipped to one's pocket unless, and until, the point has been retracted—thus serving as an ever continuing reminder which quickly causes the user to form and retain the habit of retracting the point. This is accomplished by providing a release button which, when the ball point is in its projected position, constitutes an obstruction to use of the pocket clip, but offers no such obstruction when depressed—which condition obtains when the ball point is retracted.

Another object of this invention is to provide a ball-point writing instrument having pushbutton operated propel-retract mechanism of simple and rugged design which not only can be manufactured economically but can be relied upon to give trouble-free performance.

In the drawing which accompanies this specification:

Figure 1 is a longitudinal sectional view illustrating a ball point writing instrument according to a preferred embodiment of the invention—the ball point being shown retracted;

Fig. 2 is a transverse sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a longitudinal sectional view similar

2

to Fig. 1 but showing the ball point in its projected or writing position;

Fig. 4 is a transverse sectional view taken along line 4—4 of Fig. 3;

Fig. 5 is a fragmentary sectional view taken at 5—5 of Fig. 3; and

Fig. 6 is a fragmentary elevational view of the rear end portion of Fig. 3, taken at right angles thereto.

The assembly comprises an elongate hollow barrel 10 having a bore 11 extending from end to end. Housed within barrel 10 and reciprocable lengthwise thereof is a so-called ball-and-cartridge unit 12 which comprises a writing ball 13, a feed tube 14 and an ink cartridge 15 containing a viscous paste-like ink which is fed as needed through feed tube 14 to the back surface of ball 13. Inside the ink cartridge and freely fitting the bore thereof is a relatively large metal ball 16 which functions in part as a weight to force the ink forward and in part as a sealing means to prevent leakage of ink rearwardly. Also, within cartridge 15 and at the back of ball 16 is a fixed plug 17 having an axial aperture 18 of very small diameter. This aperture allows air to enter the ink chamber thereby preventing formation of a partial vacuum as the ink is fed out.

At the rear of and in contact with unit 12 is a plunger comprising a tubular member 19 and a pushbutton member 20, the rear end of which projects from the barrel and constitutes a manually operable pushbutton.

A coil spring 21 continuously urges the ball-and-cartridge unit 12, together with plunger members 19 and 20, backwardly toward the positions in which those elements are shown in Fig. 1. By depressing pushbutton 20, the plunger and ball-and-cartridge unit are moved forwardly in the barrel against the opposition of spring 21, and ball point 13 is propelled out of the barrel from the position shown in Fig. 1 to that shown in Fig. 3.

Backward movement of the ball-and-cartridge unit and plunger is limited by a screw bushing 22 the forward end of which is adapted to engage a shoulder 20a formed on pushbutton member 20 as shown in Fig. 1.

Plunger 19 may be an integral part of the ball-and-cartridge unit, but I prefer to make this a separate part as shown.

A pocket clip 23 of conventional design is attached to the rear of barrel 10 by means of bushing 22 and comprises a resilient arm pointing toward the front end of the instrument and hav-

ing its free end normally pressed against the side of the barrel.

Disposed within barrel 10 is a member 24 constituting both latch means and a release button. Member 24 is rectangular in form as viewed in Fig. 6 and has the cross sectional configuration illustrated in Figs. 2 and 4, the outer portion 24a being relatively narrower than the inner portion 24b. Barrel 10 has a rectangular side opening 25 dimensioned to slidably fit the narrow outer portion of member 24.

Plunger 19 has an elongate opening 26, best shown in Fig. 5, in registration with member 24 and having a wide rear portion 26a and a narrower forward portion 26b. The latter is wide enough only to pass the narrow outer portion 24a of member 24, as illustrated in Fig. 2, while the wider portion 26a of opening 26 is wide enough to receive the wide inner portion 24b of member 24.

A leaf spring 27 is connected to member 24 with its free ends bearing against the interior surface of barrel 10. A slot 28 is provided in plunger 19 to clear spring 27 and permit movement of the plunger without interfering with said spring.

With the plunger in the retracted position of Fig. 1 member 24 is held in the depressed position shown, by reason of the fact that portion 26b of opening 26 is too narrow to pass the wide inner portion of member 24. This is clearly illustrated in Fig. 2.

When pushbutton 20 is depressed to propel the writing point forwardly plunger 19 also moves forwardly, carrying with it the opening 26 to the position shown in Fig. 3 wherein the portion 26a of opening 26 is fully in registration with member 24, thus allowing member 24 to be forced outwardly by spring 27. In the latter position member 24 operates as a latch, holding the plunger in its forward position by virtue of the fact that the wide inner portion 24b of member 24 cannot enter the narrow portion 26b of opening 26.

The plunger and ball-and-cartridge unit is releasable for retraction by spring 21 by simply depressing release button member 24. This moves the narrow outer portion 24a of member 24 into alignment with the narrow portion 26b of opening 26 and thus permits the plunger to retract.

It will be seen from examination of Fig. 1 that when the ball point is retracted, the outer end of release button 24 is flush with the outer surface of the barrel and constitutes no impediment to normal use of pocket clip 23. On the other hand, it will be seen from examination of Fig. 3 that when the ball point is in its projected position, the outer end of the release button constitutes an obstacle to normal use of the pocket clip. Consequently if a user forgets to depress the release button before returning the writing instrument to his pocket he will find that he cannot use the pocket clip and he will accordingly be reminded to retract the writing point.

I claim:

1. In a writing instrument, an elongate, hollow barrel having a bore terminating at its front end, a writing point propellable out of and alternately retractable into said bore, a plunger mounted in said barrel and reciprocable lengthwise thereof for propelling said writing point, a spring for retracting said plunger and writing point, the rear end of said plunger projecting from said barrel to form a manually operable pushbutton, a pocket clip attached to the back

end of said barrel and comprising a spring arm projecting forwardly along said barrel, said barrel having a lateral opening in front of and immediately adjacent the forward end of said clip, and a latch mechanism for releasably holding said plunger in its forward position, said latch mechanism comprising a release button disposed, in part, within said plunger and projecting outwardly and laterally therefrom through said lateral opening in the barrel, said opening being dimensioned to prevent movement of said release button relatively to said barrel except in the direction normal to its length, the transverse cross-section of said release button presenting a relatively narrow outer portion and a relatively wide adjoining inner portion, said plunger having an elongate slot in registration with said opening, the forward portion of said slot being wide enough to pass only the narrow outer portion of said release button, the rear portion of said slot being wide enough to pass the wider inner portion of said release button, and a spring continuously urging said release button outwardly.

2. In a ball-point writing instrument an elongate, hollow barrel having a bore terminating at its front end, a ball-and-cartridge unit housed in said barrel and reciprocable lengthwise thereof, said unit including a ball point and an ink cartridge, a plunger disposed within said barrel at the rear of said unit and reciprocable lengthwise of said barrel to propel said unit forwardly, a spring for retracting said unit and plunger, a pushbutton secured to the rear end of said plunger and projecting out of the rear of said barrel, said pushbutton being manually operable to propel said plunger and unit forwardly against the opposition of said retracting spring, a pocket clip attached to the back end of said barrel and comprising a spring arm projecting forwardly along said barrel, and latch means for releasably holding said plunger and unit in their forward positions, said latch means comprising a release button disposed, in part, within said barrel and located immediately forward of said pocket clip for movement between a depressed position latching said plunger and unit in forwardly propelled position and wherein the outer surface of said release button is substantially flush with the outer wall of said barrel and said button constitutes no impediment to the use of said clip and an outwardly projected position extending across and blocking the entrance to said clip wherein said plunger and unit are released for retraction and said release button constitutes an impediment to the use of said clip, and spring means urging said release button outwardly.

3. In a ball-point writing instrument, an elongate, hollow barrel having a bore terminating at its front end, a ball-and-cartridge unit housed in said barrel and reciprocable lengthwise thereof, said unit comprising a ball point and an ink cartridge, a tubular plunger disposed within said barrel at the rear of said unit and reciprocable lengthwise of said barrel to propel said unit forwardly, a spring for retracting said unit and plunger, a pushbutton secured to the rear end of said plunger and projecting out of the rear of said barrel, said pushbutton being manually operable to propel said plunger and unit forwardly against the opposition of said retracting spring, a pocket clip attached to the back end of said barrel and comprising a spring arm projecting forwardly along said barrel, a release button disposed, in part, within said plunger and mov-

5

able radially thereof, said barrel having a lateral opening immediately forward of said pocket clip in which the outer portion only of said release button has a sliding fit, the inner portion of said release button being too large to enter said barrel opening, said plunger having a slot through which said release button passes, said slot extending lengthwise of said plunger, the back portion of said slot being wide enough to pass the inner portion of said release button, the forward portion of said slot being wide enough to pass only the outer portion of said release button, said slot being so proportioned that when said plunger is in its retracted position the narrow forward portion of said slot embraces said release button and holds the latter depressed whereas the wider back portion of said slot embraces said release button when said plunger is in its forward position, and a spring continuously urging said release button outwardly, said release button being effective, when in its outward position only, as an impediment to the use of said pocket clip.

4. In a ball-point writing instrument, an elongate, hollow barrel having a bore terminating at its front end, a ball-and-cartridge unit housed in said barrel and reciprocable lengthwise thereof, said unit comprising a ball point and an ink cartridge, a tubular plunger disposed within said barrel at the rear of said unit and reciprocable lengthwise of said barrel to propel said unit forwardly, a spring for retracting said unit and plunger, a pushbutton secured to the rear end of said plunger and projecting out of the rear of said barrel, said pushbutton being manually operable to propel said plunger and unit forwardly against the opposition of said retracting spring, a pocket clip attached to the back end of said barrel and comprising a spring arm projecting forwardly along said barrel, a release button disposed in part within said plunger and movable radially thereof, said barrel having a lateral opening immediately forward of said pocket clip in which the outer portion only of said release button has a sliding fit, the inner portion of said release button being too large to enter said barrel opening, said plunger having a slot through which said release button passes, said slot extending lengthwise of said plunger, the back portion of said slot being wide enough to pass the inner portion of said release button, the forward portion of said slot being wide enough to pass only the outer portion of said release button, said slot being so proportioned that when said plunger is in its retracted position the narrow forward portion of said slot embraces said release button and holds the latter depressed whereas the wider back portion of said slot embraces said release button when said plunger is in its forward position, and a semi-elliptic type leaf spring connected at its mid-point to said release button and continuously urging said release button outwardly, said release button being effective, when in its outward position only, as an impediment to the use of said pocket clip, said plunger having a second slot extending lengthwise thereof and disposed diametrically opposite said first slot, the free ends of said leaf spring extending through said second slot into contact with the interior surface of said barrel, said second slot being long enough to permit reciprocation of said plunger without interfering with said leaf spring.

5. A ball-point writing instrument comprising a barrel, a unit slidably mounted in said barrel

6

and including an ink reservoir, a ball writing point at the forward end of said unit adapted to be propelled and retracted through the adjacent forward end of said barrel, and ink feed means connecting said reservoir and said writing point, a pocket clip, means for propelling and retracting said unit, and a blocking member mounted in the barrel laterally movable with respect thereto between a position blocking the entrance to said clip to render said clip inaccessible for clipping action and prevent use thereof and a position removed from said clip entrance to render said clip accessible.

6. A ball-point writing instrument comprising a barrel, an assembly slidably mounted in said barrel and including an ink reservoir, a ball writing point at the forward end of said assembly adapted to be propelled and retracted through the adjacent forward end of said barrel, ink feed means connecting said reservoir and said writing point, and a manually depressible pushbutton at the rear end of said barrel for propelling said assembly to project said writing point from said barrel, spring means constantly urging said assembly toward retracted position wherein said writing point is concealed in said barrel, a pocket clip having an entrance and means actuated by depression of said pushbutton for releasably holding said assembly in propelled position, said holding means including a manually depressible latch element movable between an active position latching said assembly in propelled position and wherein a portion of said latch element projects laterally from said barrel across and closely adjacent the entrance of said clip and obstructs the use of said clip and a depressed inactive position away from said clip entrance wherein said assembly is released for retraction by said first spring means, and spring means constantly urging said latch element toward active latching position.

7. A ball-point writing instrument comprising a barrel, a unit slidably mounted in said barrel and including an ink reservoir, a ball writing point at the forward end of said unit adapted to be propelled and retracted through the adjacent forward end of said barrel, and ink feed means connecting said reservoir and said 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 to project said writing point from said barrel, a pocket clip having at least a free end portion exteriorly of said barrel, and means for releasably holding said unit in propelled position, said holding means including a blocking member projectable laterally from said barrel adjacent and into position holding said unit projected in position in front of and closely adjacent said free clip end to obstruct said clip and render it inaccessible for clipping use in the propelled position of said unit and manually depressible out of said holding and obstructing position and away from the clip end to release said unit for return to retracted position by said spring means and to render said clip accessible, and spring means urging said blocking member toward holding and obstructing position.

8. A ball-point writing instrument comprising a barrel, a writing unit slidable in said barrel and including a writing element at the forward end of said unit and positioned to be propelled and retracted through the forward end of said barrel, spring means constantly urging said unit toward retracted position, a pocket clip extending along

7

said barrel and having a free end for engaging a pocket piece, a manually depressible clip blocking element movable between a first projecting position wherein it extends before and blocks the free end of said clip, rendering said clip inaccessible for clipping, and a second, depressed position away from said clip end whereby said clip is accessible for clipping, a spring yieldably urging said projected element toward blocking position and means for propelling said unit including a latch element for releasably latching said clip blocking element in its depressed position.

9. A ball-point writing instrument comprising a barrel, a writing unit slidable in said barrel and including a writing element at the forward end of said unit positioned to be propelled and retracted through the forward end of said barrel, spring means constantly urging said unit toward retracted position, a pocket clip element extending along said barrel and having a free end for engaging a pocket piece with at least the tip of said free end spaced from said barrel, a clip blocking element, means mounting said blocking

8

element for movement between a first position extending across the space between said tip and said barrel and obstructing said space and a second position away from said space, said blocking element being manually depressible into said second position, a depressible push button for propelling said unit, and means actuated by said push button for moving said blocking element to its first position.

HERMAN C. FRENTZEL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
365,747	Hoffman -----	June 28, 1887
378,897	Myers -----	Mar. 6, 1888
1,583,718	Hudson -----	May 4, 1926
1,585,843	Fitch -----	May 25, 1926
2,398,548	Moore -----	Apr. 16, 1946
2,400,679	Biro -----	May 21, 1946