Aug. 5, 1952 D. KAHN ET AL 2,605,746

FOUNTAIN PEN

Filed Dec. 12, 1947 2 SHEETS—SHEET 1

FIG. 1.

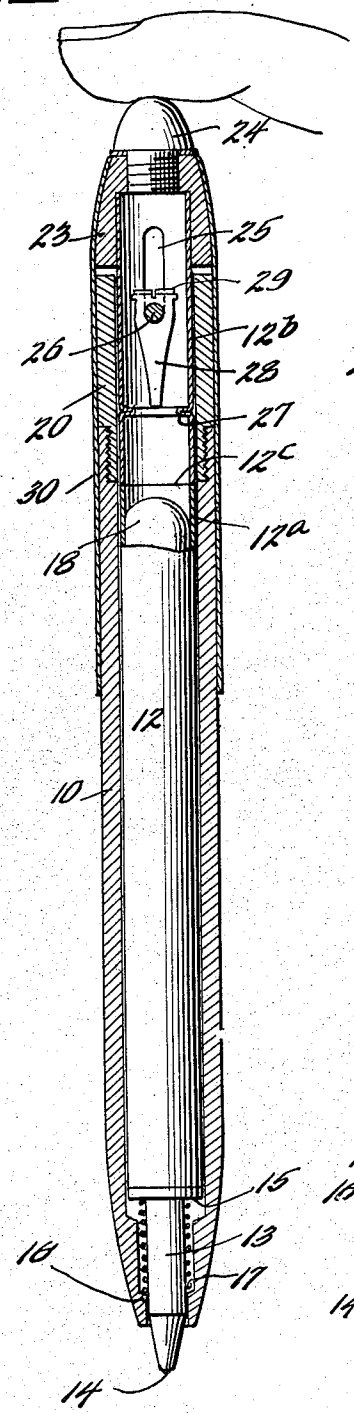


FIG. 7.

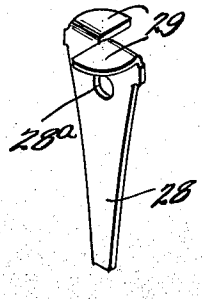
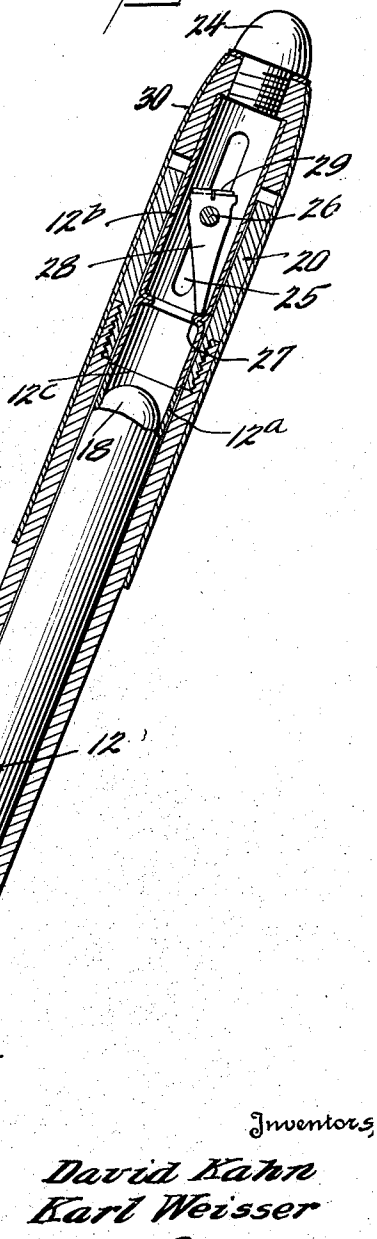


FIG. 2.



Inventors,
David Kahn
Karl Weisser
By Irvin P. Dash,
Attorney

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FIG. 3.

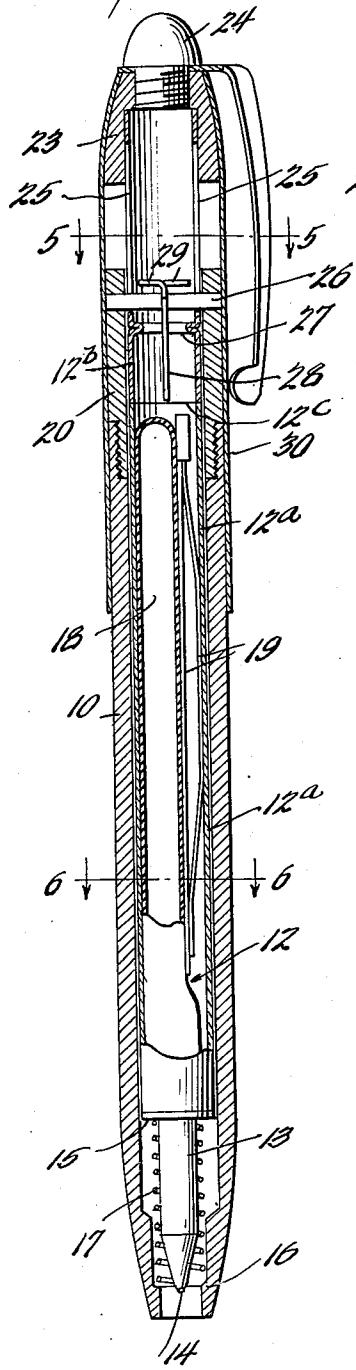


FIG. 5.

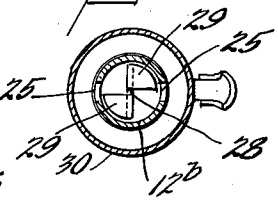


FIG. 6.

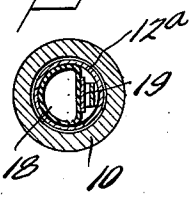
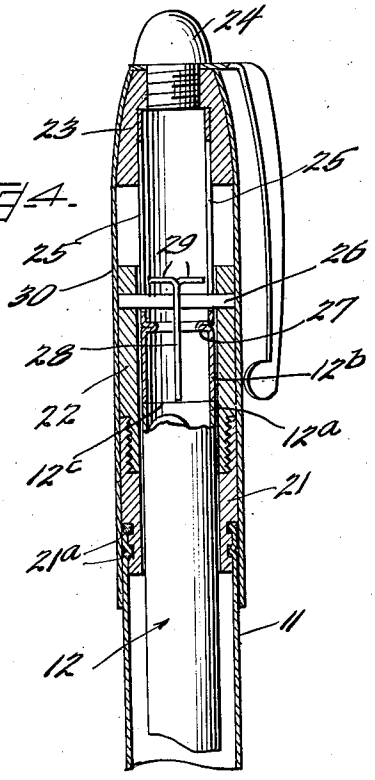


FIG. 4.



Inventors,
David Kahn
Karl Weisser
By Irvin P. Dodge,
Attorney

Patented Aug. 5, 1952

2,605,746

UNITED STATES PATENT OFFICE

2,605,746

FOUNTAIN PEN

David Kahn, Englewood, and Karl Weisser, Cresskill, N. J., assignors to David Kahn, Inc., North Bergen, N. J., a corporation of New Jersey

Application December 12, 1947, Serial No. 791,294

5 Claims. (Cl. 120—42.03)

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This invention relates to writing instruments and has special reference to a ball point pen.

One important object of the invention is to provide a pen having an improved means for housing and protecting the pen point.

Another object of this invention is to provide a novel means for protracting and retracting the writing point of a pen of this character.

A further object of the invention is to provide a novel means for holding the writing point of such a pen in protracted position.

Still another object of the invention is to provide such a holding means movable between holding and releasable positions by a simple tilting of the pen.

With the above and other objects in view, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and particularly claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Fig. 1 is an axial section through one form of the pen showing the writing point in protracted position;

Fig. 2 is a view similar to Fig. 1 with the pen tilted, and showing the action of the means for locking the writing point in protracted position;

Fig. 3 is an axial section at right angles to Fig. 1 but showing the writing point in retracted position;

Fig. 4 is a sectional view similar to the upper part of Fig. 3 but showing a modification of the structure;

Fig. 5 is a section on the line 5—5 of Fig. 3;

Fig. 6 is a section on the line 6—6 of Fig. 3; and

Fig. 7 is a detailed perspective of a locking pawl used herewith.

In carrying out the objects of this invention there is provided a barrel 10 as shown in Figs. 1, 2, and 3 of plastic material or a metal barrel 11 as in Fig. 4. In the barrel is fitted a cartridge which includes a sleeve 12a. An upper sleeve 12b is provided abutting sleeve 12a at 12c, said sleeve 12a carrying at its lower end a reduced tubular portion 13 provided with a writing point or ball 14. The end 13 is abruptly reduced and this abrupt reduction forms a shoulder 15. The lower part of the barrel is reduced to form a shoulder 16 and between the shoulders 15 and 16 the portion 13 is surrounded by a coiled compression spring 17 which urges the sleeve upwardly in the barrel.

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The lower sleeve 12a of the cartridge 12 contains a collapsible sac or capsule 18 containing ink, this capsule being open at its bottom end to allow flow of ink to the extension 13 and thus to the open point 14. Also in the sleeve 12a is a spring 19 of the leaf type which presses against the side of the sac and urges the ink downwardly therefrom, the top of the sac being closed.

In the form of the invention shown in Figs. 1 2 and 3 it will be seen that the sleeve portion 12a is enclosed throughout its length by the barrel 10. In this form there is screwed into the upper end of the barrel 10 a metal bushing 20 of the same internal diameter as the barrel 10 and the upper sleeve 12b is encased in this bushing and in a plastic cap 23.

In the form of invention shown in Fig. 4 where a metal barrel is used, there is provided a metal connector 21 which may be secured to the barrel 11 by crimping or spinning or by similar operations as indicated at 21a. The connector 21 has threaded engagement with the bushing 22 similar to the bushing 20 shown in Figs. 1, 2, and 3.

In each form there is fitted over the upper end of the sleeve portion 12b the plastic cap 23 having a threaded opening at its upper end to receive a push button 24 so that the sleeve 12b and the cartridge may be forced downwardly against the resistance of the spring 17. The sleeve portion 12b is provided with opposed longitudinally extending slots 25 wherethrough extends a pin 26, said pin being fixed at its ends in the member 20 when the barrel is made of plastic, and fixed in the member 22 when the barrel is made of a metal or metal alloy. In each form of construction the sleeve portion 12b is provided with an inwardly extending rib 27 preferably annular in form.

On the pin 26 is mounted a pawl 28 preferably formed from a piece of sheet metal and having its upper ends cut and bent to form opposed segmentally-spaced portions 29 which fit loosely within the sleeve portion 12b but limit the transverse stroke of the pawl on the pin. These segmentally shaped lugs 29 form means for limiting the transverse movement of the pawl on its supporting pin. In other words, the lugs 29 serve to prevent the pawl 28 from traveling longitudinally along the pin so that the pawl will remain centered on the pin. If the pawl were permitted to move in either direction on its supporting pin to the wall of the sleeve 12b, the pawl would become engaged with the latching rib 27. For example, if the pawl 28 were not provided with the lugs 29 or equivalent means

it would be possible when the pin was transferred from a tilted position to a vertical position for the pawl **28** to be latched against the latching rib **27**, and then if pressure were applied by the finger or equivalent means to the push button **24** the pawl would not be in a released position and the spring **17** could not move the cartridge **12** and the ball point in a retracted position. The lower end of the pawl is tapered to a square end and swings freely so as to engage over the upper surface of the rib **27**.

As will be seen when the pen is held in a vertical position, pawl **28** will hang vertically from the pin **26** and the spring **17** will keep the cartridge and the ball point retracted. When the ball point **14** is projected by holding barrel **10** tightly in the hand of the operator and pushing downwardly on the button **24** and the pen tilted to approximately the position shown in Fig. 2, the pawl **28** will retain its vertical position and engage the upper surface of the rib **27** and thereby latch or hold the writing point in a protracted position for writing.

While the writing point of the pen is shown protracted in Fig. 1, when the pen is in a vertical position and then tilted as shown in Fig. 2 to lock the writing point in its protracted position, it will be understood that the ball point may be protracted while the pen is held in a tilted position at which time the pawl **28** will immediately lock the ball point in its protracted position as soon as the pawl is able to engage over the upper surface of the rib **27**. It will thus be clear that the ball point may be protracted when the pen is held either vertically or tilted. Referring to Fig. 1, although the pawl **28** is not latched against the latching rib **27**, the writing point is protracted. It is held in this protracted position by the finger pressure. However, if the finger is released, the writing point will be retracted to the position shown in Fig. 3. However, if, while the pen is held in the position shown in Fig. 1 with the finger pressure applied against the button **24**, and then the pen is tilted, the pawl **28** latches on the latching rib **27** and the writing point **14** is then locked in a protracted position. In normal neutral operation, the fountain pen as shown in Fig. 3 with the point retracted will be tilted to the position shown in Fig. 2, and then pressure will be applied against the button **24**, the writing point will then be protracted and stay protracted because of the engagement of the pawl **28** with the latching rib **27**. When it is desired to release the locking mechanism and retract the writing point **14**, the pen is brought to a substantially vertical position and a slight pressure is applied to the button **24** whereupon the pawl **28** will disengage from the latching rib **27** whereupon, when pressure on the button **24** is released, the spring **17** will retract the cartridge **12** and the writing point **14** to a position shown in Fig. 3. It is desired to point out that the lower end surface of the pawl **28** is at right angles to the major axis of the pawl to provide a flat surface so that said lower edge will firmly engage the upper surface of the rib **27**. Then, there is no danger of the pawl **28** slipping from the retaining rib **27** and allowing the point to be retracted.

The length of the locking pawl **28** below the pivot point 28_a is great enough for this portion of the pawl to overbalance the upper portion whereby the pawl will always hang in a substantially vertical position when it is disengaged from the rib **27**. Stated differently, the mass of the material below the pivot 28_a is greater than the mass of the pawl material above the pivot point 28_a.

Fitting over the plastic cap **23** and extending downwardly over the bushing **20** and a portion of the barrel **10** is a cover or sleeve **30** which is held in place by the push button **24** which also serves to hold in place the clip **31** as clearly shown in Fig. 3.

There is provided in accordance with the present invention a fountain pen provided with a writing point which may be protracted and retracted or repelled, said fountain pen comprising a barrel, a sleeve longitudinally slidable in the barrel, a writing member on the lower end of the sleeve, said writing member being retractable in and protractable from the barrel and means for holding the point in a protracted position. Stated differently, coacting means are provided on the sleeve and barrel for latching the writing point into a writing-point protracted position. The latching means is operative upon tilting of the pen to hold the writing point in a protracted position, and inoperative upon the barrel being held in a vertical position. The latching means comprises a pawl swingingly supported within the sleeve member, and a ratchet rib on the sleeve which is engageable by the pawl upon tilting of the pawl. Spring means are provided urging the sleeve and the writing point into retracted or repelled position and manually operable means are provided to protract the writing point. A pin is provided at the upper portion of the sleeve, said pin extending through the sleeve from side to side of the barrel and the pawl is swingingly supported on the pin, said pawl having means to provide sliding movement within the sleeve longitudinally of said pin. More specifically, the pawl is provided with opposed flanges engageable against the sides of said sleeve whereby to limit transverse movement of the pawl on the pin. It is to be noted that the pawl **28** is preferably formed from a piece of sheet metal and, therefore, can be cheaply manufactured in quantity. The locking pawl centralizes on the pin principally due to its weight and thereby permits the balltip to be repelled.

As previously stated, the pawl has a larger mass of material below the point of support than above it so that the pawl will always hang in a vertical position when it is disengaged from the latching rib. This may also be accomplished by having the weight of the material below the pivot point 28_a greater than the weight of that portion of the locking pawl above the pivot point. It is desired to point out that the pawl **28** is an unbalanced pawl and the unbalancing may be obtained by having the mass and/or weight of the pawl above the pivoting or rocking point 28_a greater than the mass and/or weight of the pawl portion below the pivoting point 28_a. The unbalancing of the pawl insures that upon tilting of the barrel from the vertical, the pawl will automatically swing or rock on its pivot point and engage its latching means, as for example, the rib herein set forth.

There has been provided in a pen having a barrel and slidable means in the pen which carries the writing point, means for supplying ink to said writing point together with means for holding the writing point in a writing position, that is, in a protracted position when the pen is tilted from the vertical position, said means being inoperative to, in itself, protract the pen writing point when the pen is held in a vertical

position. Of course, when pressure is applied as shown in Fig. 1, the writing point can be held in a protracted position but as soon as the hand is removed from the push button 24, the pen point is retracted and properly, this being due to the pawl being unlatched as shown in Fig. 1.

There is also provided a pen having slidable means carrying a writing point protractable from and retractable from the barrel together with means to supply writing medium to the point. The pawl is swingingly supported within said slidable means. Means are provided extending transversely of the barrel for pivotally supporting the pawl which has a larger mass and/or weight below the pivot point than above it. Means are provided in said barrel engageable with said pawl which, upon tilting of the pen barrel, latch the pawl. There is also provided means normally urging the writing point in a protracted position when the pen is held in a vertical position and no pressure is applied to the push button.

What is claimed is:

1. In a pen, a barrel, a slidably mounted sleeve therein carrying a writing point and containing an ink sac, a spring within the barrel and biasing said sleeve upwardly, said sleeve having an internal shoulder therein adjacent the top of the barrel and oppositely disposed longitudinally extending slots above the shoulder, a pin extending diametrically of the barrel and through said slots, and a gravity biased pawl pivotally mounted on said pin and adapted to abut said internal shoulder on the opposite sides of said sleeve, said pawl having opposed quadrant shaped wings above the pivot pin adapted to cooperate with opposite sides of the opposed slots to center the pawl on the pin.

2. In a pen, a barrel, a slidably mounted sleeve carrying a writing point and containing an ink sac and having an extension projecting through the upper end of the barrel for manual engagement, a spring within the barrel and biasing said sleeve upwardly, said sleeve having an internal shoulder therein adjacent the top of the barrel and oppositely disposed longitudinally extending slots above the shoulder, a pin extending diametrically of the barrel and through said slots, and a gravity biased pawl pivotally mounted on said pin and adapted to abut said internal shoulder on the opposite sides of said sleeve, said pawl having opposed quadrant shaped wings above the pivot pin adapted to cooperate with opposite sides of the opposed slots to center the pawl on the pin.

3. In a pen, a barrel, a slidably mounted sleeve therein carrying a writing point and containing an ink sac, a cap secured to said sleeve and having a skirt receiving the upper end of the latter, a spring within the barrel and biasing said sleeve upwardly, said sleeve having an internal shoulder therein adjacent the top of the barrel and oppositely disposed longitudinally extending

slots above the shoulder, a pin extending diametrically of the barrel and through said slots, and a gravity biased pawl pivotally mounted on said pin and adapted to abut said internal shoulder on the opposite sides of said sleeve, said pawl having opposed quadrant shaped wings above the pivot pin adapted to cooperate with opposite sides of the opposed slots to center the pawl on the pin.

4. In a pen, a barrel, a slidably mounted inner sleeve therein carrying a writing point and containing an ink sac, a cap secured to said inner sleeve and having a skirt longitudinally in registration with the barrel and receiving the upper end of said inner sleeve, an outer sleeve secured to said cap and encompassing the barrel in sliding relationship, said inner sleeve having an internal shoulder therein adjacent the top of the barrel and oppositely disposed longitudinally extending slots above the shoulder, a pin extending diametrically of the barrel through said slots, and a gravity biased pawl mounted on said pin and adapted to abut said internal shoulder on the opposite sides of said sleeve, said pawl having opposed quadrant shaped wings above the pivot pin adapted to cooperate with opposite sides of the opposed slots to center the pawl on the pin.

5. In a pen, a barrel, a slidably mounted sleeve therein carrying a writing point and containing an ink sac, a spring within the barrel and biasing said sleeve upwardly, said sleeve having an internal shoulder therein adjacent the top of the barrel and oppositely disposed longitudinally extending slots above the shoulder, a pin extending diametrically of the barrel and through said slots, and a gravity biased pawl pivotally mounted on said pin and adapted to abut said internal shoulder on the opposite sides of said sleeve, said pawl having opposed quadrant shaped wings above the pivot pin adapted to cooperate with opposite sides of the opposed slots to center the pawl on the pin.

DAVID KAHN.
KARL WEISSER.

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