

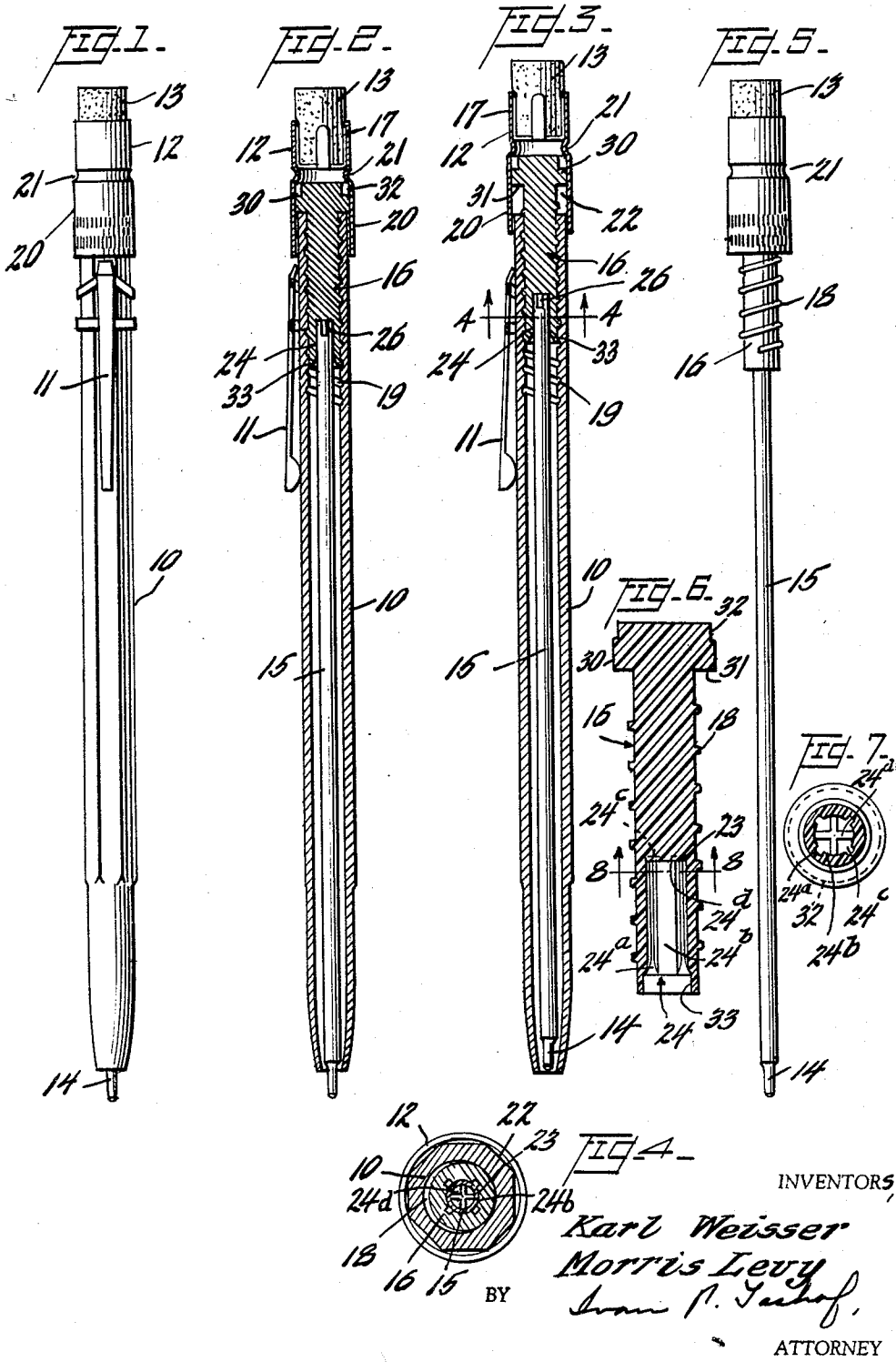
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RETRACTABLE WRITING INSTRUMENT

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RETRACTABLE WRITING INSTRUMENT

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The present invention relates to a writing instrument, preferably of the ball point type, in which means are provided whereby the writing tip may be projected into writing position and retracted to a position within the barrel of the instrument, as desired. The invention more particularly relates to a ball point pencil in which an exceedingly simple propel-retract mechanism is employed which permits the writing instrument to retain the appearance and operating characteristics of a conventional mechanical pencil.

An object of the invention is the provision of a writing instrument of the ball point type in which the cartridge which carries the liquid writing material is part of a unitary assembly to facilitate the removal and re-insertion of the cartridge containing assembly.

Another object of the invention is the provision of a ball point pencil in which the cartridge containing the liquid writing material is part of a unitary assembly having an eraser and means are provided to vent the cartridge.

It is also an object of the invention to provide a ball point pencil in which the writing tip is projected and retracted using the same motion which is normally employed to project and retract the lead in a conventional mechanical pencil.

Still another object of the invention is the provision of a ball point pencil having an eraser in which the exterior appearance of a conventional mechanical pencil is retained irrespective of whether the writing tip is projected into writing position or retracted to a position within the barrel of the pencil.

Other and further objects of the invention will become apparent from the description which follows taken in conjunction with the accompanying drawing in which:

Fig. 1 is a pictorial side elevation of a ball point writing instrument constructed in accordance with the invention;

Fig. 2 is a side elevation, partially in section, showing the assembled instrument with the writing tip in its fully projected position ready for writing;

Fig. 3 is a side elevation similar to Fig. 2 with the exception that the ferrule has been rotated to retract the writing tip into a protected position within the barrel of the writing instrument;

Fig. 4 is a cross section taken on the line 4—4 of Fig. 3;

Fig. 5 is a side elevation of the cartridge-bushing-ferrule unit;

Fig. 6 is an enlarged side elevation, in section, showing a threaded bushing constructed in accordance with the invention; and

Fig. 7 is a cross-section taken on the line 8—8 of Fig. 7.

Referring to Fig. 1, a writing instrument of the ball point type is shown, the writing instrument having a barrel 10, a clip 11 which is slidably mounted on the barrel, a ferrule 12, an eraser 13 and a ball point writing tip 14 projecting from the forward end of the barrel 10. As will be apparent from Fig. 1, the exterior of the ball point

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instrument is very similar to that of a conventional mechanical pencil.

Referring to Fig. 2, a writing instrument in accordance with the invention contains a tubular cartridge 15 for liquid writing material with a ball point writing tip 14 mounted in the forward end of the cartridge 15. The rear end of the cartridge 15 is fitted within a tubular bushing 16, the tubular bushing being mounted within the forward portion of the ferrule 12. An eraser 13 is seated in an eraser cup 17 of conventional construction and mounted in the rear of the ferrule 12.

The tubular bushing 16 is provided with external screw threads 18 and the interior of the rear of the barrel 10 is threaded as indicated by the numeral 19, the threads on the exterior of the bushing 16 being intended to mesh with the threads 19 on the interior of the rear of the barrel.

It is preferred to provide both the tubular bushing 16 and the barrel 10 with screw threads since these parts are produced by injection molding and the threads can be formed with the same operation. It will be appreciated, however, that either of the threads 18 or 19 can be replaced by projections or lugs which engage female threads on the opposite member and that it is only necessary to have the bushing in threaded engagement with the interior of the rear of the barrel.

The threads are preferably provided with a pitch of about $\frac{1}{8}$ "- $\frac{3}{16}$ " so that one complete revolution of the ferrule 12 will be sufficient to completely retract the writing tip 14 from its fully projected position into a protected position within the barrel 10.

The writing tip 14 in Fig. 2 is fully projected and as can be seen from the drawing, the rear of the tubular bushing 16 is provided with a portion 30 of enlarged diameter. The forward surface of the portion 30 constitutes an annular abutment 31 which engages the rear end of the barrel 10 when the ferrule 12 is screwed home to project the writing tip 14 into writing position.

It will further be observed from Fig. 2 that the ferrule 12 is provided with a forward portion 20 and a centrally disposed circumferential depression 21. The enlarged portion 30 of the tubular bushing 16 is fitted within the forward portion of the ferrule 20 and the tubular bushing 16 and the ferrule 12 are pressed together to force the enlarged portion 30 into engagement with the circumferential depression 21 which acts as a stop. The forward portion 20 of the ferrule 12 has a greater diameter than the diameter of the rear of the barrel 10 so that the rear of the barrel 10 is surrounded by the forward portion of the ferrule.

Referring to Fig. 3, the writing tip 14 is shown in a retracted position, said retracted position being obtained by rotating the ferrule 12 in a counter-clockwise direction starting from the position shown in Fig. 2. As can be seen from Fig. 3, the writing tip 14 has been retracted to a protected position within the barrel 10, and the annular abutment 31 is now spaced from the rear end of the barrel 10.

It will be observed that the forward portion 20 of the ferrule 12 is of sufficient length so that the ferrule 12 surrounds the rear of the barrel 10 when the writing tip 14 is retracted. Preferably, the distance between the annular abutment 31 and the forward end of the ferrule 12 is about 2 to 3 times the distance which the writing tip projects from the forward end of the barrel when the cartridge is fully projected as shown in Fig. 2.

Referring to Fig. 4, it will be again apparent that the forward portion 20 of the ferrule 12 surrounds the barrel 10 and in this regard it will be observed that a space 22 (Fig. 3) is provided between the exterior of the bushing 16 and the interior of the forward portion 20 of the ferrule 12. The rear of the barrel 10 projects into the space 22.

Referring more particularly to Figs. 6 and 7, it will be observed that the tubular bushing 16 is provided with an axial cartridge receiving bore 24 providing an internal abutment 23 intermediate the length of the bushing 16. The bore 24 of bushing 16 is formed with spaced longitudinal ribs 24b which extend inwardly from the wall 24a. The space between the ribs 24b thus provides longitudinal channels to permit air to pass to the rear 24c of the bore 24. The rear of the cartridge 15 may be slotted at 26. Therefore, when the rear of the cartridge 15 is fitted within the bore 24 of the bushing 16, the rear of the cartridge abuts abutment 23.

It will be apparent that air can now pass through the longitudinal channels between the ribs 24b to the rear of the cartridge through slot 26 and this serves to vent the cartridge to the atmosphere. Additionally, the provision of the slot 26 increases the flexibility of the rear end of the cartridge 15 and facilitates insertion of the cartridge 15 within the bore 24 while assisting in enabling the bushing to firmly grip the rear end of the cartridge 15.

To further facilitate access of air to the rear of the cartridge, and to enable such access when the slot 26 is not employed, the rear 24c of the bore 24 may be formed with raised ribs 24d so that air can pass freely through the channels between the ribs 24b and into the cavities between the raised ribs 24d to thus pass around the cylindrical end of the cartridge 15 and gain access to the rear thereof. In this construction the rear of the cartridge will abut against the raised ribs 24d when the cartridge is inserted in the bore 24.

It will be observed that the forward end of the bushing 16 is open to the atmosphere since the forward end of the cartridge 15 does not seal the opening in the forward end of the barrel 10 especially when the cartridge has been retracted as shown in Fig. 3.

The rearmost portion of the bushing 16 may be formed with a circumferential depression 32 to facilitate insertion of the bushing into the forward portion 20 of the ferrule 12. Also the forwardmost portion 33 of the bore 24 may be of enlarged diameter with the ribs 24b starting to the rear of the forwardmost end of the bore 24 to facilitate insertion of the cartridge 15.

It will be observed that when the ferrule 12 is rotated in a counter-clockwise direction (which operation serves to retract the writing tip 14), that if this counter-clockwise rotation is continued, the screw threads 18 will become disengaged from the threads 19 on the interior of the barrel, and that when this occurs, the writing tip 14, the cartridge 15, the bushing 16 and the ferrule 12 can be removed as a unit by simply sliding the barrel 10 forwardly to remove the same. The writing tip-cartridge-bushing-ferrule unit is shown in Fig. 6 of the drawing.

It will be appreciated that the extreme simplicity of the disassembly operation adds greatly to the value of the construction of the invention since it greatly simplifies repair and replacement of worn or exhausted parts. Further, the cartridge can be removed and replaced as a unit together with the bushing, ferrule and eraser.

The cartridge may contain the ordinary ink which is conventionally used in ball point pens. However, it is preferred to employ a writing fluid which is erasible.

It is desired to point out that the projection and retraction of the writing tip in accordance with the invention is accomplished by the mere rotation of the ferrule 12 and in this regard, the operating characteristics of the writing instrument of the invention closely resembles the writing characteristics of a conventional mechanical pencil. This is especially desirable where the cartridge is filled with an erasible writing fluid since the operating characteristics of the writing instrument of the invention may then serve to identify the character of the writing fluid within the cartridge.

It is also desired to point out that in a conventional mechanical pencil, the position of the writing lead is determined by direct observation, the remainder of the pen-

cil being substantially unaltered in appearance by the turning operation applied to the ferrule. It will be appreciated that because of the fact that the forward portion 20 of the ferrule 12 overhangs the rear of the barrel 10 in accordance with the invention enables the same result to be achieved. In other words, when the writing tip is retracted, the appearance of the pencil remains substantially unaltered in that the rearward movement of the ferrule 12 with respect to the barrel 10 does not result in the opening of a space therebetween.

The writing instrument of the invention is of extremely simple construction which greatly reduces the cost of the device as well as the danger of mechanical failure. Thus, in addition to the clip, the eraser, the eraser cup and the cartridge with writing tip, the only parts involved are the ferrule, the bushing and the barrel. The barrel and bushing are integral plastic parts and can be mass produced by injection molding. The ferrule is of conventional construction and simply produced at small cost.

Assembly is also extremely simple. The bushing is inserted in the ferrule and the cartridge is fitted within the bushing. The eraser and eraser cup are then inserted as a unit into the rear of the ferrule thus completing the unitary cartridge containing assembly. This assembly is simply screwed into the barrel and the writing instrument is then completed.

We claim:

1. A ball point writing instrument comprising a hollow barrel, a ferrule, said ferrule being spaced about said barrel, a bushing having a rear portion secured within said ferrule for rotation therewith and a forward portion having an axial bore therein, said bushing being in threaded engagement with the interior of the rear of said barrel to permit said bushing to be screwed into the rear of said barrel, a cartridge carrying a ball point writing tip at its forward end, the diameter of said cartridge not exceeding the internal diameter of the internally threaded portion of the barrel, the rear of said cartridge being fitted within the bore in the forward portion of said bushing for rotation therewith, whereby rotation of said ferrule is effective to propel and retract said writing tip and to remove said bushing and cartridge from said barrel when necessary, said bore being formed with spaced longitudinal ribs to permit air to pass through channels defined by said ribs to the rear of said cartridge, the rear of said bore being formed with raised ribs defining cavities communicating with the channels defined by said longitudinal ribs.

2. A writing instrument as recited in claim 1 in which said ferrule is formed with a forward portion having an internal diameter greater than the external diameter of said barrel and said bushing is formed with a rear portion of enlarged diameter, said bushing being secured within said ferrule at a point spaced from the forward end thereof by engagement of said ferrule with said rear portion of enlarged diameter to thereby provide an annular space between said bushing and said ferrule for reception of the rear portion of said barrel.

3. A ball point writing instrument comprising a hollow barrel, a ferrule, said ferrule being spaced about said barrel, a bushing having a rear portion secured within said ferrule for rotation therewith and a forward portion having an axial bore therein, said bushing being in threaded engagement with the interior of the rear of said barrel to permit said bushing to be screwed into the rear of said barrel, a cartridge carrying a ball point writing tip at its forward end, the diameter of said cartridge not exceeding the internal diameter of the internally threaded portion of the barrel, the rear of said cartridge being fitted within the bore in the forward portion of said bushing for rotation therewith, whereby rotation of said ferrule is effective to propel and retract said writing tip and to remove said bushing and cartridge from said barrel when necessary, said bore being formed with spaced longitudinal ribs defining channels, the rear of said bore

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defining an internal abutment means with only part of the rear edge of said cartridge abutting said abutment means whereby air may pass through said channels into the rear of said cartridge.

References Cited in the file of this patent

UNITED STATES PATENTS

272,948	Fiske -----	Feb. 27, 1883
1,294,247	Drenchko -----	Feb. 11, 1919
2,205,929	Musgrave -----	June 25, 1940
2,392,840	De Groft -----	Jan. 15, 1946
2,427,068	Randolph -----	Sept. 9, 1947

5

2,441,280
2,603,186
2,715,388
2,753,844
2,778,337

10

976,412
934,235
1,076,270
1,094,542

6

Moore -----	May 11, 1948
Fischer -----	July 15, 1952
Cofield et al. -----	Aug. 16, 1955
Boss -----	July 10, 1956
Lovejoy -----	Jan. 22, 1957

FOREIGN PATENTS

France -----	Oct. 25, 1940
France -----	Jan. 10, 1948
France -----	Apr. 21, 1954
France -----	Dec. 9, 1954