Sept. 14, 1965 M. B. YOUNG 3,205,864

WRITING IMPLEMENT

Filed March 21, 1963

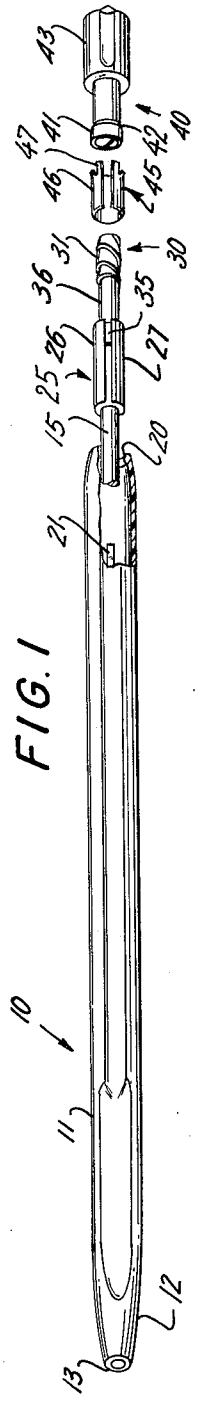

FIG. 1

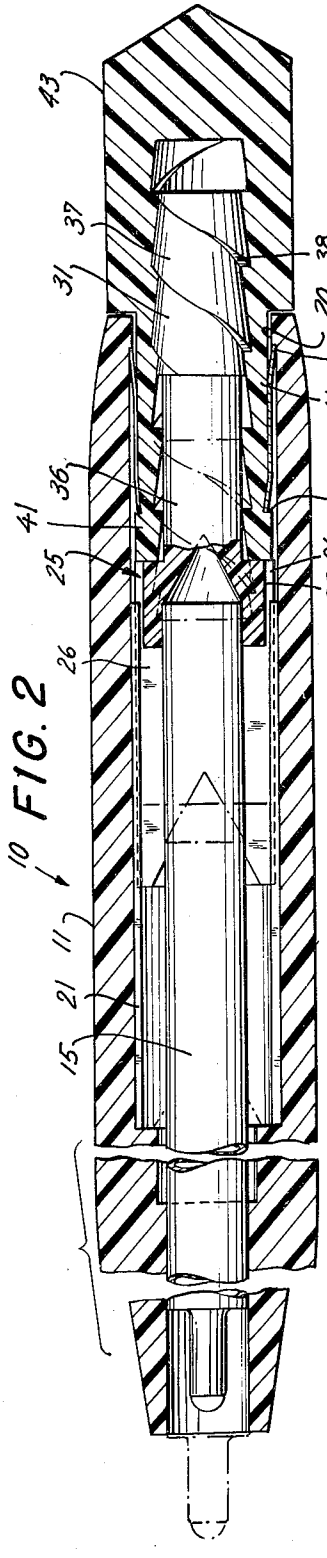

FIG. 2

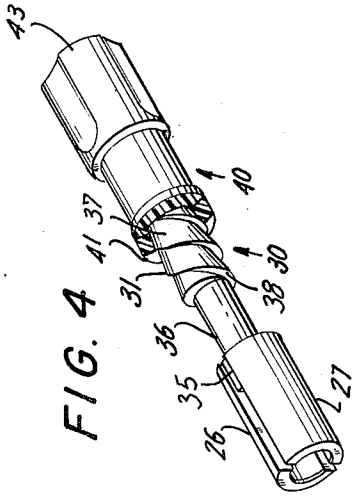

FIG. 4

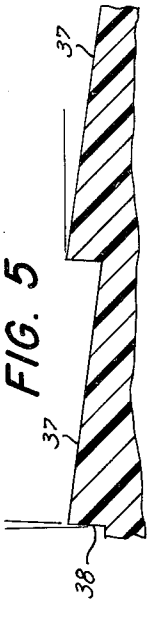

FIG. 5

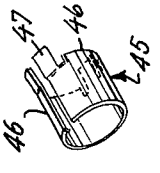

FIG. 3

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# WRITING IMPLEMENT

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This invention relates to the art of retracting mechanisms, more particularly to implements such as pens or pencils in which the writing point is retractable into the handle or barrel of the writing implement.

The term "writing implement" will be here employed to include all devices in which an operative point is utilized to effect surface treatment, such as pens, pencils, lipsticks, other cosmetic applicators and stick erasers.

A variety of writing implements have been evolved in which, for example, a ball point pen cartridge or the like is maintained in a retracted position within a barrel forming the handle so that the point of the pen may be extended or retracted depending upon whether the pen is in use or not. Thus, the point is subject to extension for use and to retraction to both protect the point and to protect the pocket of the wearer from marking when the ball point pen or the like is being carried around.

These retractable point writing implements are intended for widespread distribution and use, and accordingly cost of manufacture and maintenance must be kept at a minimum. As the case with all mechanical components, the fewer the number of parts, the simpler the manufacture and assembly, as well as maintenance of the assembled parts.

With all of the aforesaid implements, it is of course necessary that the extended point remain in the extended operative position upon the application of force thereto, as occurs during normal use. Thus, where a ball point pen is employed, normal writing pressure should not force the writing point back into the barrel.

It is accordingly among the primary objects of this invention to provide an improved retracting mechanism for withdrawing the writing point of a writing implement into the handle barrel.

Another object of the invention is to provide a retracting assembly having a minimum number of components and subject to ready assembly.

It is also an object of the invention to provide an improved twist type assembly permitting ready extension of the writing point and in which the application of pressure to the point will not result in retraction of the point.

According to the invention, a novel retractable point writing implement is provided having an elongate, hollow barrel forming the handle of the implement. The barrel is contoured to provide a satisfactory manually grippable external surface, preferably tapered at its lower end in a configuration much like that of conventional lead pencils. At the normally upper end of the interior of the hollow barrel, a retaining shoulder is formed extending into the interior of the barrel, and a key is formed within the barrel. Slidably mounted within the barrel beneath the aforementioned shoulder, are engaging means preferably in the form of spring pressed jaws formed by slotting a sleeve member to permit engagement of the rear end of a ball point cartridge. Secured to the engaging means, and preferably formed integrally therewith, is a clutch member of an elongate configuration provided with a reverse buttress thread on the surface thereof. Engaging said clutch is a retractor nut internally threaded to receive and operatively engage the buttress thread on the clutch. A handle portion of said nut extends outwardly from the barrel to permit manual gripping thereof so that upon rotation of the handle on said nut, the clutch and its associated engaging means will be extended or retracted depending upon the direction of rotation of said nut. An assembly sleeve is secured to said nut and is provided with a relatively short locking tang adapted to engage beneath the shoulder in the barrel, and a plurality of guide fingers implementing alignment of the nut and clutch assembly within the barrel.



An important feature of the invention resides in the use of a modified reverse buttress thread on the clutch so that through desired screwing action will effect extension and retraction of the writing element, the application of pressure to the point of the writing element will not produce retraction of the writing element.

Among the other important features of the invention is the use of the improved assembly sleeve serving to implement rapid insertion of the writing element, the clutch, and the retracting nut into assembled relationship with the barrel.

In the accompanying drawings in which are shown one or more of various possible embodiments of the several features of the invention,

FIG. 1 is an exploded perspective view of a retractable writing implement embodying the concept of the invention,

FIG. 2 is an enlarged cross sectional view through an assembled writing implement of the type illustrated in FIG. 1,

FIG. 3 is an enlarged detail view of the novel assembly clip,

FIG. 4 is an enlarged detail view of the clutch and engaging means, and

FIG. 5 is an enlarged thread profile of the thread employed on the clutch.

Referring now to the drawings, the novel writing implement **10**, as best seen in the drawings, is formed with an elongate hollow barrel **11** contoured to conform to the hand when held in a position for writing, and provided with a tapered point **12**, much like that of a conventional lead pencil. The lower end of the barrel **11** is open as at **13** to permit extension therefrom of one end of a writing element, be this a length of graphite or lead, lipstick, eraser, or the ball point of a ball point cartridge **15**, as illustrated.

Within the interior of hollow barrel **11** at the upper end thereof as viewed in FIG. 1, an annular retaining shoulder **20** is formed, and a key **21** of an elongate configuration is formed in the barrel at a spaced distance from retaining shoulder **20**.

The writing element **15** is maintained within the barrel by engaging means **25** having jaws **26** and **27** resiliently to engage the upper end of the writing element **15**. These engaging means **25** are preferably formed by employing an elongate cylindrical member and slotting the end thereof so as to provide the two spaced jaws **26** and **27**. Extending from engaging means **25** and formed integrally therewith is a clutch **30** of a screw-shaped configuration and provided with a modified reverse buttress thread **31** at best seen in FIGS. 1, 2, 4 and 5. It will be observed that this reverse buttress thread has the helically wound screw thread formed with the top surface **37** of the thread providing a conical flare extending from the shank of the clutch to the exterior surface thereof. In addition, the lower surface **38** of the thread is inclined at a small angle to a perpendicular to the axis of the clutch so as to cause any axial forces on the thread to wedge the clutch thread with respect to a mating nut thread. The reverse buttress is such that the conical flaring is from the top outwardly to the bottom so that the increase frictional resistance moving from the top to the bottom of the thread is substantially increased, thereby preventing inadvertent screwing action. In a preferred embodiment, the top surface **37** of thread **31** is inclined at between 5

and 10 degrees to the axis while the lower surface is inclined at between 1 and 5 degrees to a perpendicular to the axis.

A keyway 35 is associated with the engaging means 25 and the clutch 30. Keyway 35 is in this instance shown in FIGS. 1 and 4 provided between the clutch and the engaging jaws 26 and 27 immediately below the shank 36 of the clutch.

A retracting nut and handle assembly 40 is formed as viewed in FIGS. 1 and 2 in which the retracting nut 41 is formed with an interior threading engaging the threading 31 of the clutch 30. On the exterior surface of the nut, a shoulder 42 is provided for a purpose made hereinafter more apparent. At the upper end of the assembly 40 a handle 43 contoured to provide ready digital manipulation by the user of the writing implement is arranged.

A novel assembly sleeve 45 formed of a sheet material such as sheet metal or the like is secured about the retracting nut above shoulder 42. Sleeve 45, as best seen in FIG. 3, is formed with relatively short retaining tangs 46 adapted to seat beneath the retaining shoulder 20 in barrel 11. Guide fingers 47 on the clip 45 implement insertion of the sleeve into the barrel after the sleeve has been positioned about the retracting nut 41.

In use, the afore-described components are assembled into operative relationship by positioning the assembly sleeve 45 about the shank of retracting nut and handle assembly 40 and the nut 41 is engaged with the threads 31 of clutch 30. The writing element, which in this case is illustrated as a ball point cartridge 15, is inserted between the jaws 26 and 27 of the engaging means 25, and the assembled components are inserted into barrel 11 by forcing retaining sleeve 45 downwardly so that tangs 46 seat beneath retaining shoulder 20 in barrel 11.

Thereafter, the writing implement is ready for use, and simply by twisting of the handle element 43, the rotation of nut 41 which is now axially fixed with respect to barrel 11 will force the clutch 30 to move inwardly or outwardly, depending on the direction of rotation of the nut. It will be observed that the inclination of the thread is such that most facile rotation is accomplished by distending the point of the writing implement since threading action which causes the clutch to move from its point of maximum diameter to its point of minimum diameter with respect to the threads 31 is that type of motion which causes extension of the point.

It is thus seen that an improved writing implement has been provided having relatively few components, simple of manufacture and maintenance. By the utilization of a modified reverse buttress thread, the normal tendency of the screw member to ride up or down with respect to its mating surface upon the exertion of pressure is eliminated, since the conical configuration of the threads is such as to prevent normal writing forces to exert sufficient force.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.



Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A retractable point writing implement having a writing element slidably mounted therein, said implement comprising in combination: an elongate hollow barrel forming the handle of the implement and accommodating the writing element, engaging means in said barrel for gripping the writing element, a clutch secured to said engaging means to move therewith, a reverse buttress thread on said clutch, complementary means on said barrel and on said clutch to restrain rotary movement of said clutch member yet permit axial movement thereof, a retracting nut rotatably mounted to engage the threads on said clutch and adapted upon rotation of said nut to effect extension or retraction of the engaging means and the writing implement, said retracting nut being of outer diameter less than the inner diameter of said hollow barrel, the end of the handle defined by the hollow barrel having an opening to receive said retracting nut, said retracting nut having a handle portion at the outer end thereof, said retracting nut having a shoulder on its outer surface adjacent the inner end thereof, said barrel having a shoulder on its inner surface adjacent the opening therein adapted to be longitudinally spaced from the shoulder on said retracting nut when the latter is positioned in the barrel and a cylindrical assembly sleeve encompassing the inner portion of said retracting nut, said sleeve having its inner end aadapted to abut against the shoulder on said nut, the outer end of said sleeve having resilient tangs adatped to engage the shoulder in said barrel whereby said assembly sleeve will retain said retracting nut in position in said barrel restrained from axial movement yet permitting rotary movement thereof.

2. The combination set forth in claim 1 in which said assembly sleeve has alignment fingers facilitating insertion of the sleeve into the barrel after the sleeve has been positioned about the retracting nut.

3. The combination set forth in claim 1 in which said complementary means comprises an elongated key formed in said barrel and the keyway formed in said retaining means engaging said key.


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