Aug. 20, 1963 W. B. SPATZ 3,101,074

MARKING PENCIL

Filed April 19, 1960

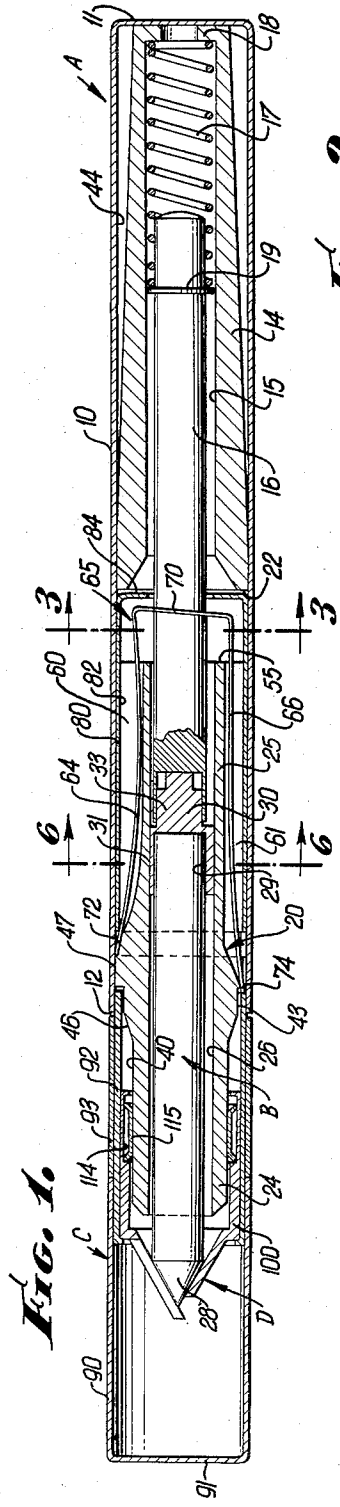


Fig. 1.

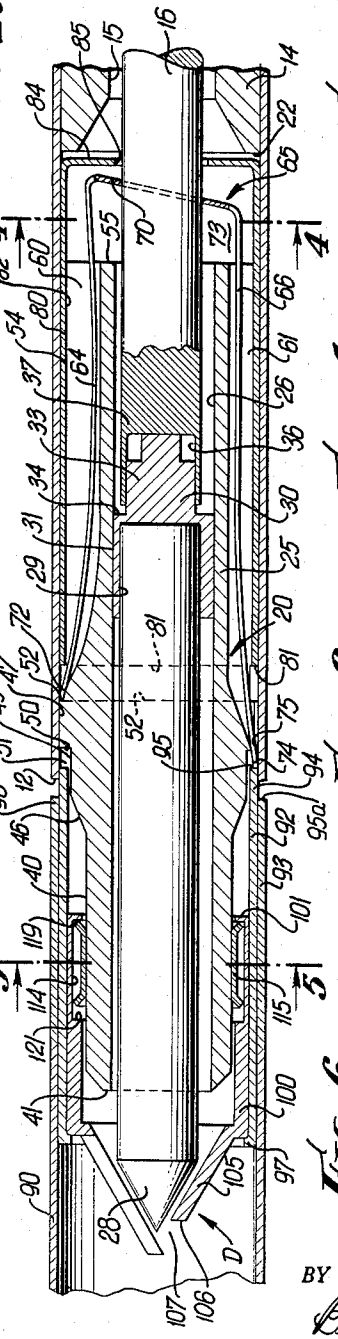


Fig. 2.

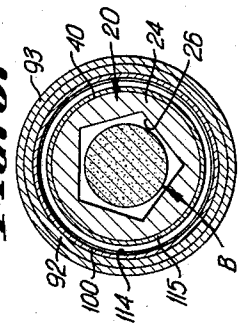


Fig. 5.

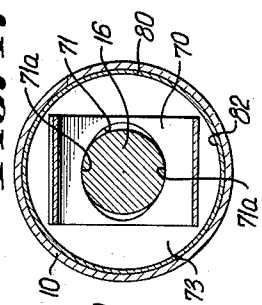


Fig. 4.

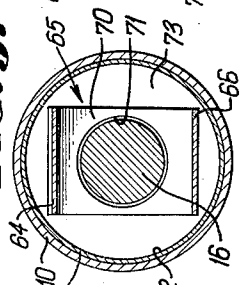


Fig. 3.

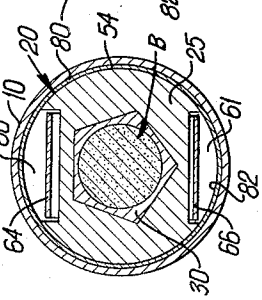


Fig. 6.

INVENTOR.
WALTER B. SPATZ
BY
Bernard Kriegel
ATTORNEY.

United States Patent Office 3,101,074
Patented Aug. 20, 1963

3,101,074

MARKING PENCIL

Walter B. Spatz, 11182 Sunset Blvd.,
Los Angeles 49, Calif.

Filed Apr. 19, 1960, Ser. No. 23,173
13 Claims. (Cl. 120—20)

This invention relates to marking pencils and more particularly to an improved marking pencil device having a self-contained sharpener therein with improved means for feeding the pencil core to the sharpener.

Marking pencil devices employing soft crayon or wax-like cores used for marking china and for cosmetic purposes such as eyebrow pencils, which pencil devices employ feeding mechanisms to feed the pencil core from a case, are well known to the art. It is also known to the art to employ various types of sharpening mechanisms which are contained within a cap forming a part of the case enclosing the pencil core. This is necessitated by the fact that such pencil cores are of soft wax-like substances which will not retain the type of point required for marking or cosmetic purposes. Such prior art devices possess certain disadvantages, however, particularly disadvantages due to the relatively soft nature of the pencil core which softness further increases with a rise in temperature. Accordingly, due to this characteristic of the core, continuing stresses imparted thereto will cause damage or deformation of the core, or clogging of the device. In addition, prior art devices are in general rather complex structures which do not lend themselves readily to mass production. Although not particularly limited thereto the present invention is specifically designed for and has its major utility as an eyebrow pencil, and accordingly, the invention will be described throughout in connection with such use.

In co-pending application Serial No. 530,993 filed August 29, 1955 by Walter P. Spatz entitled "Marking Pencil," now Patent No. 2,941,508, there is disclosed and claimed an improved construction for eyebrow pencils which utilizes a one-way latch device to provide a forward movement of the slidably splined pencil core into a conical sharpener positioned within the cap for the device, such that when the cap is rotated on the barrel enclosing the pencil core, the latter is brought to a point. Essentially, the device of the co-pending application includes a barrel with a tubular support therein which is actually a part of the barrel. This support is adapted to receive the pencil core which is propelled in a direction forwardly of the barrel by a feeding means that includes a pusher rod and a spring bearing thereagainst. A one-way latch device in the form of a U-shaped latch spring has an opening through the base of the U with the pusher rod extending therethrough. This latch is of the self-energizing type and is adapted to grip the pusher rod to prevent the spring from moving the rod and the pencil encased thereby in a forward direction within the barrel. The latch spring is released from the pusher rod whenever an operating member mounted on the barrel is engaged by the cap of the marking pencil, which cap is adapted to be rotatably mounted over the forward portion or nose of the barrel. The operating member moves one leg of the U-shaped latch spring to move the base portion of the latch spring containing the opening from an inclined position to a position more at right angles to the axis of the pusher rod and pencil core, so that the peripheral edge of the latch on opposite sides of the opening are freed from the rod, thereby allowing the spring to urge the rod and the pencil core engaged thereby in a forward direction. Forward movement places the pencil point out of the forward nose of the barrel and within a sharpener mounted in the cap. When the cap is placed over

the barrel an end portion of the cap operatively moves the operating member to displace the elongate leg in a rearward direction and free the intermediate portion of the latch from the pusher rod and allow the spring to move the rod and pencil core in a forward direction. Rotation of the cap causes the sharpener to form a point on the pencil since the spring constantly urges the pusher rod and pencil core forwardly against the sharpener until the point has been completed. When the cap containing the sharpener is removed from the barrel, as when the pencil is to be used, the elongate leg of the latch is free to move forwardly of the barrel to allow the intermediate or base portion of the latch to resume its inclined position and grip the pusher rod to prevent the spring from further propelling the rod and the pencil in a forward direction.

Accordingly, it can be seen that the pencil core is released and moved forwardly into the sharpener whenever the cap is mounted thereon, and that the pencil core can be pointed after the cap is oriented on the barrel. Although this prior construction is eminently satisfactory in most respects, the present invention provides an improved device of simplified construction which relieves the pencil core of impressive forces when the sharpening is not occurring.

It is an object of the present invention to provide an improved marking pencil device having a sharpener positioned within the cap thereof which sharpener can be employed to sharpen the point of the pencil core selectively whenever desired or required.

It is another object of the present invention to provide an improved marking pencil device employing a self-feeding mechanism which mechanism will feed the pencil core to the sharpener only upon express actuation and which will maintain the point of the pencil at a proper position for use.

Another object of the present invention is to provide a marking pencil device of the type described wherein the pencil core is fed forwardly to a required position but which has no compressive forces thereon when the pencil core is not being sharpened. Accordingly, the relatively soft marking material forming the pencil core is not subject to damage due to stresses imposed thereon when the stresses or a combination of stress and temperature would otherwise damage the material or cause it to be deformed within the pencil case.

A still further object of the present invention is to provide such a marking pencil device which can be formed economically and can be mass produced utilizing efficient and economical materials throughout.

The novel features which are believed to be characteristic of the present invention both as to its organization and method of operation, together with further objects and advantages thereof, will be better understood from the following description considered in connection with the accompanying drawing in which a presently preferred embodiment of the invention is illustrated by way of example. It is to be expressly understood, however, that the drawing is for the purpose of illustration and description only and is not intended as a definition of the limits of the invention.

In the drawings:

FIGURE 1 is a view in longitudinal section of an embodiment of the invention showing the device in the operative position at which the pencil core is being fed to the sharpener such that rotation of the cap will sharpen the point on the pencil core;

FIGURE 2 is an enlarged partial view corresponding to FIGURE 1 showing the operative parts of the device in the non-operative or "at-rest" position at which the pencil core is retained by the latch means from bearing against the sharpener;

FIGURE 3 is a view in cross-section taken along line 3—3 of FIGURE 1;

FIGURE 4 is a view in cross-section taken along line 4—4 of FIGURE 2;

FIGURE 5 is a view in cross-section taken along line 5—5 of FIGURE 2; and

FIGURE 6 is a view in cross-section taken along line 6—6 of FIGURE 1.

Referring now to the drawing and particularly to FIGURE 1 thereof, the marking pencil device in its presently preferred form includes a pencil case A within which the pencil core B, sometimes hereinafter referred to as "the pencil," is carried, and a cap section C operatively but releasably affixed to the pencil case A. The cap C includes a pointer or sharpener D, as more fully described hereinafter, for sharpening the forward end of the pencil core B by relative rotation of the sharpener about the pencil core when the core is urged into the sharpener.

Referring now to the case section A of the device, such case includes an outer barrel 10 which is formed of suitable material. The outer barrel is a longitudinally extending elongate member closed at the rearward end 11 thereof and open at the forward end 12. Positioned within the outer barrel and extending forwardly from the rearward end thereof is a sleeve 14 which defines a longitudinally extending bore 15, which bore is greater in diameter than the diameter of a pusher rod 16 mounted therein for longitudinal movement within the device along the axis thereof. Means are provided for urging the pusher rod 16 forwardly in the case, such means being a compression spring 17 mounted between a rearward flange 18 at the rearward end of the sleeve and a bearing ring 19 mounted upon the pusher rod proximate the rearward end thereof. The spring surrounds the portion of the pusher rod 16 to the rear of the bearing ring and urges the pusher rod 16 continuously forward within the case A and bore 15 along the longitudinal axis of the device.

As shown in FIGURES 1 and 2, the barrel includes an elongate tubular support member 20 positioned within the case A and extends longitudinally with respect thereto from a position proximate to, but spaced from, the forward end 22 of the sleeve 14 to a position well forward of the end 12 of the outer barrel 10. The portion of the tubular support member extending forwardly of the forward end 12 of the barrel is referred to hereinafter as the nose piece 24, while that portion contained within the confines of the outer barrel, i.e., between the sleeve and the forward end 12 of the barrel, is referred to hereinafter as the latch spring support means or inner portion 25 of the tubular support member 20. A longitudinally extending bore 26 which is symmetrical with respect to the longitudinal axis of the device extends longitudinally throughout the support member and is adapted to receive the pusher rod 16 and pencil core B therein in longitudinally movable but non-rotatable association therewith. As will become more apparent hereinafter, in order to sharpen the pencil core it is necessary to retain the pencil core in the non-rotatable condition, while the sharpener is rotated thereabout to produce a point at the forward end 28 thereof. For this purpose the bore 26 extending through the tubular support member 20 is non-circular in transverse configuration to prevent rotation of a non-circular member within the bore. In the illustrative embodiment the bore is pentagonal in transverse cross-section, but can assume any other suitable non-circular configuration. In order to prevent rotation of the core B within the bore 26, the pencil core can be non-rotatably joined to or mounted within, a splined socket member, which socket member is mateable with the interior wall of the bore. In the presently preferred embodiment, a pencil core of circular section is non-rotatably fixed within the circular bore 29 of a splined socket member 30. The socket member has an external surface 31 that is pentagonal in configuration and slidably mateable with the bore 26 of the tubular support member, as shown in FIGURE 5. The socket 30 is formed with a rearwardly extending male protrusion 33 which extends rearwardly from the end wall 34 of the splined socket member substantially symmetrically about the center line through the pencil core which is substantially coincident with the longitudinal axis through the device. The rearwardly extending male protrusion is in turn mateable with a female socket 36 of circular transverse configuration formed in the forward end 37 of the pusher rod.

As shown in FIGURES 1 and 2, the male protrusion 33 abuts the base of the female socket 36 such that forward movement of the pusher rod is transmitted to the splined socket member 30 and pencil core carried thereby. The inside diameter of the female socket and the outside diameter of the male protrusion are formed with an interference fit in order that the pencil core and splined socket will be retained with the pusher rod to prevent the pencil core from falling or being too easily removed from the device. It is possible, however, to remove the pencil core and socket member by exerting an outward pull upon the pencil core to remove the splined socket member 30 from the socket 36 in the pusher rod. This feature is preferable in order to allow easy replacement of the pencil core within the device.

From the foregoing it can be seen that the bore 26 extending through the tubular support member 20 is aligned with the bore 15 extending through the sleeve and that both are symmetrical about the longitudinal axis through the case A and through the device including the cap C. The pencil core B and pusher rod 16 are thus also aligned with the longitudinal axis thereof being coincident with the longitudinal axis through the device. As previously described, the spring 17 acting upon the bearing ring 19 will continually urge the pusher rod 16 forward within the case and the pusher rod will in turn urge the pencil core continuously forward through the bore 26 of the tubular support member. In order to prevent the ejection of the pencil core from the device when the cap section is not positioned thereon, a one-way latch means is provided which allows the pusher rod to be moved rearwardly in the device, but prevents its forward movement with respect to the device, when such forward movement is not desirable. It can be seen further, however, that in order to sharpen the point of the pencil core and to maintain the point at the proper position for use it is necessary to allow movement of the pencil core forward selectively. In prior art devices, wherein the pencil core is sharpened when the cap section is rotated on the case or barrel, the pencil core is urged forwardly into the rotating sharpener by release of a one-way latch spring due to actuation thereof by the cap section. However, when the sharpening of the point has been terminated, with the cap in its closed condition on the barrel, the latch remains in a released condition and the spring is continuously urging the pencil core into the sharpener. Such continuous compressive force upon the pencil core, as well as the continuous force urging the point into the sharpener, cause deformation of the point and damage thereof as well as subjecting the pencil core within the tubular support member to damage. Such damage can occur particularly when ambient temperatures are sufficiently high to cause the relatively soft pencil core to soften further and become readily deformable. By means of the present invention, the one-way latch mechanism is so constructed and arranged in combination with the cap section C of the device that forward movement of the pencil core into the sharpener for sharpening of the core can be selectively determined by the operator of the device. Thus, the pencil core can be sharpened only when it is desired to do so, and when not being sharpened no forces are exerted upon the pencil core to move it forwardly into the sharpener. Such movement is caused to occur only when the operator of the device moves the cap from a closed but at-rest posi-

tion into a sharpening position, as described more fully hereinafter.

Referring now particularly to FIGURES 1, 2, 5 and 6, the elongate tubular support member is a single member formed to provide the nose piece **24** mateable with the cap section C, and the latch means support section **25** which is positioned within the outer barrel **10** at the forward portion thereof. The nose piece **24** extends a substantial distance forwardly of the forward end **12** of the outer barrel and is generally cylindrical with a circular transverse cross-section of uniform first diameter **40** extending from the forward end **41** of the nose piece to a longitudinal position slightly forward of the forward end **12** of the outer barrel. At a position proximate the forward end **12** of the outer barrel, but spaced forwardly thereof, the tubular support member is increased in diameter to a second diameter **43** substantially greater than the first forward diameter **40** of the nose piece but less than the inside diameter **44** of the outer barrel. The second diameter **43** occurring at the longitudinal section proximate the forward end of the barrel is of a predetermined diameter which is less than the diameter of the inner barrel by an amount sufficient to allow the insertion of an actuating portion of the cap section C. The first forward diameter **40** and the second diameter **43** of the elongate support member are joined by a tapered circumferential wall **46** which acts as a guide surface for inserting the cap cylinder over the nose piece and into the forward end of the outer barrel, as described more fully hereinafter. Extending rearwardly from the portion of second diameter **43**, the elongate support member increases to a third diameter **47** which is substantially equal to the inside diameter of the outer barrel. The junction of the longitudinally extending section of second diameter and the longitudinally extending section of maximum diameter **47** is defined by a transversely extending forwardly facing shoulder **50**, which shoulder **50** is spaced inwardly from the outer end of the barrel to define an annular space **51** closed at one end by the shoulder **50** and bounded by the periphery of the support member at the second diameter **43** thereof and the inside diameter **44** of the barrel. Spaced rearwardly from the shoulder **50** the support member is again reduced to a fourth diameter **54** to define a rearwardly facing transverse shoulder **52**. The portion of the member at the diameter **54** extends from the shoulder **52** to the rearward end **55** of the elongate support member **20**. The fourth diameter **54** is slightly less than the inside diameter of the barrel, the difference in diameter being adapted to accommodate the insertion of the elongate support member **20** at the rearward portion thereof into a thin-walled retaining sleeve **80** which extends from a position spaced from the rearwardly facing shoulder **52** in contact with a leg of the latch spring, as described hereinafter, to a longitudinal position proximate the forward end **22** of the sleeve **14** and spaced from the rearward end **55** of the support member.

As shown particularly in FIGURE 6, first and second diametrically opposed slots are formed in the support member extending from the rearward end thereof. The first and second slots are of different lengths to accommodate the two legs of the one-way latch spring. The upper or first slot **60** is sufficient in width to accommodate the upper leg **64** of the latch spring **65** and extends from the rearwardly facing shoulder **52** to the rearward end of the support member. The radial depth of the upper slot **60** is sufficient to accommodate the spring without interference in its relaxed configuration and in the configuration to which it is deformed to retain the pusher rod as described more fully hereinafter. The second or lower longitudinally extending slot **61** extends from the forwardly facing shoulder **50** to the rearward end **55** of the support member and is of sufficient depth at the forwardly facing shoulder **50** to allow the protrusion of the latch spring into the annular space **51**. Thus, an opening is provided through the support member at the forwardly facing shoulder **50**, which opening is of sufficient width and depth to allow the lower or actuating leg **66** of the latch spring **65** to extend from a position rearwardly of the support member **20** to a position at which it extends forwardly beyond the forwardly facing shoulder **50** into the annular space **51**.

The latch spring **65** is positioned within the device to allow movement of the pusher rod and pencil core in one direction only when the latch spring is in the first, or holding, condition as shown in FIGURE 2, and to allow the pusher rod and pencil core to be moved forwardly when the latch spring is in the second or released condition as shown in FIGURE 1. Referring now to FIGURES 1, 2, 3 and 4, the latch spring **65** is a generally U-shaped spring with an elongate upper leg **64**, an elongate lower leg **65**, of greater length than the upper leg, and in intermediate, or base, portion **70** which has an opening **71** extending therethrough. The opening **71** is slightly greater in size than the diameter of the pusher rod **16**. The base portion **70** of the latch spring, when the latch spring is in its holding condition, is at an angular orientation relative to a transverse plane extending through the device perpendicular to the longitudinal axis thereof. That is, the base **70** is formed at an acute angle to the upper leg **64** and at a correspondingly obtuse angle with the lower leg **66**. Thus, when the latch spring is deformed from its holding condition by moving the legs to position the base portion closer to a plane normal to the device, the circular opening **71** through the base is sufficient in effective size to allow the free passage of the pusher rod therethrough in both axial directions, as shown in FIGURE 3. In the holding or relaxed condition of the spring, however, as shown in FIGURE 4, the base portion **70** is inclined substantially to the axis of the pusher rod, the opposite sides of the base portion defining the opening **71** binding upon and gripping the rod **16**, thereby preventing forward movement of the pusher rod, since a force exerted forwardly on the pusher rod tends to move the base **70** to a greater degree of angularity increasing the frictional force between the base and the pusher rod. The latch spring will, however, allow the pusher rod to be moved rearwardly since rearward forces directed upon the base portion will tend to decrease the angularity of the base and release the base from the rod **16**.

Thus, as shown in FIGURES 1, 2 and 6, the upper leg **64** of the spring **65** is positioned in the upper slot and is longitudinally fixed therein with the forward end **72** of the upper leg abutted against the rearwardly facing shoulder **52** of the support member. The base portion **70** is positioned within the longitudinally extending annular space **73** defined between the rearward end of the support member **20** and the forward end of the sleeve **14**. The lower leg of the spring is greater in longitudinal extent than the upper leg, and extends longitudinally within the second groove **61** of the elongate support member. The forward edge **74** of the lower leg of the spring extends through the opening **75** defined by the groove in the forwardly facing shoulder **50** and for a substantial distance forwardly of the shoulder into the annular space **51**. The distance by which the forward edge of the lower leg extends into the annular space is determined by the amount of longitudinal movement of the lower leg which is required to alter the plane of the base section **70** of the spring toward a position substantially normal to the pusher rod **16**, such that the pusher rod can move freely in both directions through the opening **71**. Thus, when the lower leg **66** is at its forward position as shown in FIGURES 2 and 4, the intermediate or base portion of the latch spring is at a substantially inclined angle corresponding to the at-rest or holding position of the latch spring as described hereinbefore, at which the opposed portions **71***a* of the peripheral edge surface of the opening **71** are in binding contact with the pusher rod. Conversely, when

the forward edge 74 of the lower leg of the spring is moved rearwardly to the shoulder 50 the base portion 70 is moved toward a plane perpendicular to the axis of the pusher rod to fill the opposed portions 71*a* from the rod, allowing it to move freely through the opening 71, as shown in FIGURES 1 and 3.

A thin walled retaining sleeve 80, having an open forward end and a flanged rearward end is positioned around the inner portion of the elongate support member 20 with the forward end 81 of the retaining sleeve positioned proximate the rearwardly facing shoulder but spaced therefrom such that the forward edge 81 of the retaining sleeve holds the upper leg 64 of the spring 65 against longitudinal movement, while permitting such longitudinal movement of the lower leg due to the greater depth of the lower groove 61 in the support member at the position of the forward end 81 of the retaining sleeve. The retaining sleeve 80 thus has an inside diameter 82 corresponding to the outside diameter 54 of the inner portion of the elongate support member rearwardly of the rearward facing shoulder 52. The rearward end 84 of the retaining sleeve is positioned adjacent to the forward end of the sleeve 14 and has a circular opening 85 therethrough adapted to allow free movement of the pusher rod 16 through the end of the retaining sleeve. The retaining sleeve thus maintains the latch spring in its assembled position on the inner portion of the support member and prevents longitudinal movement of the upper leg thereof. Thus, longitudinal movement imparted rearwardly to the lower leg of the latch spring causes the intermediate or base portion 70 to be moved toward the plane normal to the axis of the rod 16.

The cap section C, as discussed hereinbefore, includes the sharpener D and is adapted to be longitudinally slidably mateable with the forward portion of the nose piece 24 of the support member. The cap section C includes a thin-walled forward section 90 having a closed forward end 91. An actuating section 92 is frictionally secured within the forward section 90 and projects axially therefrom, the actuating section being surrounded by and projecting rearwardly from a separate ring section 93 extending from the forward section 90. The actuating section 92 is adapted to fit within the annular space 51 so as to engage the lower leg 66 of the one-way latch and release the latter from the rod 16. The extent by which the actuating section projects rearwardly from the inner end 96 of the ring 93 is approximately equal to the longitudinal extent of the annular space 51. Thus, the rearwardly extending portion 94 of the actuating section extends fully within the annular space 51 in substantial abutting relation to the shoulder 50, with the rearward end 96 of the ring substantially abutting the forward end 12 of the case barrel 10. When in this position, the actuating section 92 has moved the lower leg 66 of the latch spring rearward to move the spring to the unlatched condition, as discussed hereinbefore.

The actuating section 92 has a forward inwardly extending flange 97 positioned longitudinally forwardly of the forward end 41 of the nose piece when the cap C is mounted upon the barrel, as shown in FIGURES 1 and 2. The inwardly extending flange 97 acts as a retaining shoulder to limit forward movement of the pencil sharpener D secured within the section 92. The sharpener includes a cylindrical member 100 adapted to be disposed over the nose piece 24, the rear end 101 of the member being positioned forwardly of the rearward end 95 of the cap barrel by a substantial distance, such that the rearward end 101 will be spaced from the tapered circumferential wall 46 of the nose piece when the cap C is mounted upon the nose piece. The forward portion of the sharpener D is integral with its cylinder 100, and consists of a generally conical member 105 having an inclined cutter 106 adapted to form the point on the pencil B when the spring 17 forces the pencil against the conical member 105 and the cutter. The cuttings will move out of the sharpener through an end 107 of the conical cutter and through a slot in the conical wall bounded on one side by the cutter 106, the cuttings falling into the forward cap section 90, which can be forcibly slipped from the section 92 whenever the section 90 is to be emptied. Normally, however, the sections 90 and 92 move as a unit.

The cap C is frictionally and releasably held upon the nose piece 24 of the barrel A in such manner that it can be retained longitudinally thereon while being freely rotatable with respect to the barrel of the device. Also, the means for frictionally holding the cap upon the nose piece allows sufficient axial freedom of the cap that it can be moved from an assembled at-rest position, where the latch means is in engagement with the pusher rod, to a second actuating position at which the leg 66 of the latch means had been moved rearwardly to disengage the latch means and allow the pusher rod 16 and pencil core B to be moved forwardly against the sharpener D in the cap. As shown in the drawings, the sleeve 100 has an inside diameter substantially equal to but greater than the external diameter 40 of the nose piece at the forward portion thereof. An annular groove 114 is provided in the sleeve 100, there being a split, contractile holding ring 115 positioned within this groove 114. The mounting ring 115 is of substantially lesser longitudinal width than the longitudinal width of the annular groove 114. The mounting ring 115 is of the split resilient type which has an unrestrained inside diameter less than the diameter 40 of the nose piece. The split mounting ring can be expanded sufficiently to be disposed over the nose piece and frictionally grip its periphery with a force preventing inadvertent removal of the cap C from the barrel, without, however, preventing sliding of the cap onto and from the barrel nose piece. The friction ring 115 has a minimum outside diameter, with the cap removed from the nose piece, greater than the inside diameter of the sleeve 100 so that the ring cannot fall out of the groove when the cap is off the barrel. The groove 114 is of sufficient radial extent as to permit the ring 115 to expand therein when placed on the nose piece 24 and frictionally grip the nose piece.

Due to the greater width of the annular groove 114 than the width of the mounting ring 115, a certain extent of longitudinal movement of the cap C along the nose piece is possible without moving the mounting ring 115 relative to the nose piece. The increased width of the annular groove with respect to the mounting ring is predetermined to allow longitudinal movement of the cap C with respect to the mounting ring 115, which movement is sufficient to allow actuation or release of the latch spring 65. Thus, as shown in FIGURE 1, when the cap is placed over the nose section, the forward shoulder 121 of the annular groove will force the mounting ring 115 over the nose piece and into the position shown in FIGURE 1. The mounting ring is thus movable onto the nose piece to the position at which the rearward end 95*a* of the cap abuts the forward end of the outer barrel of the case. At this position, the actuating portion 94 of the cap has entered the annular space 51 and the forward end 95 of the actuating section has moved the lower leg 66 of the latch spring rearward to place the base section in the configuration shown in FIGURE 3 at which the pusher rod 16 and pencil B are free to be moved forwardly by the spring 17. At this position, the pencil core has been forced against the sharpener D. Accordingly, rotation of the cap C will cause the sharpener D to cut a point on the end of the pencil core. When the rearward force on the cap C, which force is to the right in the figures, is released, however, the spring 17 acts through the rod 16, pencil B and cutter D to move the cap C forwardly of the barrel until the rear shoulder 119 of the annular groove 114 engages the friction mounting ring 115. Due to such movement, the cap portion 94 has moved away from the latch leg 66, allowing the latch to assume its

relaxed configuration at which it has a binding force upon the pusher rod **16**, as shown in FIGURE 4, and the device is in the at-rest position, in that no forward force can now be exerted by the spring **17** tending to urge the pencil B against the sharpener D.

Accordingly, it can be seen from the foregoing that operation of the sharpener D contained within the cap C of the marking pencil device can be utilized to sharpen the point of the pencil core only when desired. In order to sharpen the point, it is necessary only to exert a slight inward force upon the cap C to release the latch and then rotate the cap. Upon release of this force, the cap C is moved forwardly of the barrel and the latch sufficiently to allow the latch to reengage the pusher rod, preventing the spring from forcing the pencil B against the sharpener.

What is claimed is:

1. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of the barrel to locate the forward end of the core exteriorly of the barrel; a cap adapted to be mounted on said barrel; sharpening means within and rotatable with said cap to engage and sharpen the pencil core when said cap is disposed on said barrel in a maximum rearward position; releasable latch means normally engaging said feeding means to prevent said feeding means from moving the core forwardly in said barrel; said latch means being shifted to released position by said cap in said maximum rearward position to enable said feeding means to feed the pencil core against said sharpening means; means frictionally mounting said cap on said barrel in such manner as to permit rotation of said cap on said barrel when in said maximum rearward position to rotate said sharpening means and also to permit said feeding means to shift said cap forwardly on said barrel from said maximum rearward position to effect reengagement of said latch means with said feeding means.

2. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of the barrel to locate the forward end of said core exteriorly of the barrel; a cap adapted to be mounted on said barrel; sharpening means within and rotatable with said cap to engage and sharpen the pencil core when said cap is disposed on said barrel in a maximum rearward position; releasable latch means normally engaging said feeding means to prevent said feeding means from moving the core forwardly of said barrel; said latch means including an actuating member extending longitudinally of said barrel and engaged by said cap when in said maximum rearward position to release said latch means and enable said feeding means to feed the pencil core against said sharpening means; means frictionally mounting said cap on said barrel in such manner as to permit rotation of said cap on said barrel when in said maximum rearward position to rotate said sharpening means and also to permit said feeding means to shift said cap forwardly on said barrel from said maximum rearward position to effect reengagement of said latch means with said feeding means.

3. In a marking pencil: a barrel having means engaging a pencil core for supporting the pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of said barrel to locate the forward end of said core exteriorly of said barrel; a cap; means for operatively mounting said cap on said barrel for relative rotation thereon, said cap mounting means including a lost-motion device permitting limited longitudinal movement without rotation of said cap relative to said barrel from a rearward longitudinal position to a forward longitudinal position while mounted thereon; sharpening means positioned within and rotatable with said cap when said cap is engaged on said barrel and in said rearward position to sharpen said core when said core is urged forwardly into said sharpening means; releasable latch means normally engaging said feeding means to prevent said feeding means from moving said core forwardly longitudinally in said barrel; said latch means operatively connected with said cap while said cap is mounted on said barrel, said latch means being movable to the release position thereof to release said feeding means and permit said core to be moved forwardly when said cap is moved from said forward to said rearward position; said latch means being normally urged to engage said feeding means when said cap is moved from said rearward to said forward position by said feeding means and core.

4. In a marking pencil: a barrel having means engaging a pencil core for supporting the pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of said barrel to locate the forward end of said core exteriorly of said barrel; a cap; means for operatively mounting said cap on said barrel for relative rotation thereon, said cap mounting means including a lost motion device permitting limited longitudinal movement without rotation of said cap relative to said barrel from rearward longitudinal position to a forward longitudinal position while mounted thereon; sharpening means positioned within and rotatable with said cap when said cap is engaged on said barrel and in said rearward position to sharpen said core when said core is urged forwardly into said sharpening means; releasable latch means normally engaging said feeding means to prevent said feeding means from moving said core forwardly longitudinally in said barrel; said latch means including an actuating member extending longitudinally of said barrel and operatively engaged by said cap at said rearward position thereof; said actuating member when engaged by said cap at said rearward position being positioned longitudinally to release said latch means from said feeding means to permit said feeding means to urge said core forwardly into said sharpening means; said actuating member being normally urged longitudinally of said barrel to move said latch means to said normal position at which said latch means engages said feeding means when said cap is urged to said forward position by said feeding means.

5. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of said barrel to locate the forward end of said core exteriorly of the forward end of said barrel; a cap; means movably mounted in and relative to said cap for frictionally engaging said barrel; said cap being rotatable with respect to said friction engaging means and longitudinally movable through a limited longitudinal distance from a forward position to a rearward position with respect to said friction engaging means while said friction engaging means are engaged on said barrel; sharpening means positioned within and rotatable with said cap when said cap is engaged on said barrel to sharpen said core when said core is urged forwardly into said sharpening means; releasable latch means normally engaging said feeding means to prevent said feeding means from moving said core longitudinally in said barrel; said latch means operatively connected with said cap while said cap is engaged on said barrel, said latch means being movable to the release position thereof to release said feeding means and permit said core to be moved forwardly when said cap is moved from said forward to said rearward position; said latch means being normally urged to engage

said feeding means when said cap is moved from said rearward to said forward position by said feeding means and core.

6. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of said barrel to locate the forward end of said core exteriorly of the forward end of said barrel; a cap; means movably mounted in and relative to said cap for frictionally engaging said barrel; said cap being rotatable with respect to said friction engaging means and longitudinally movable through a limited longitudinal distance from a forward position to a rearward position with respect to said friction engaging means while said friction engaging means are engaged on said barrel; sharpening means positioned within and rotatable with said cap when said cap is engaged on said barrel to sharpen said core when said core is urged forwardly into said sharpening means; releasable latch means normally engaging said feeding means to prevent said feeding means from moving said core longitudinally in said barrel; said latch means including an actuating member extending longitudinally of said barrel and operatively engaged by said cap at said rearward position thereof; said actuating member when engaged by said cap at said rearward position being positioned longitudinally to release said latch means from said feeding means to permit said feeding means to urge said core forwardly into said sharpening means; said actuating member being normally urged longitudinally of said barrel to move said latch means to said normal position at which said latch means engages said feeding means when said cap is urged to said forward position by said feeding means.

7. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of the barrel to locate the forward end of the core exteriorly of the barrel; said barrel having a forwardly extending nose portion of predetermined outside diameter; a cap, said cap having an inside diameter substantially equal to but greater than said outside diameter, said cap defining an annular groove in the internal wall thereof, said groove being of predetermined longitudinal extent; a contractile ring, rotatably mounted in said groove, said ring being normally urged to an inside diameter less than said outside diameter of said nose portion and being expandable to said outside diameter thereof, said contractile ring having a longitudinal width substantially less than said predetermined longitudinal extent of said groove, such that said cap is operatively mounted on said nose portion rotatable with respect thereto and longitudinally movable from a forward position to a rearward position relative to said barrel while said ring is engaged on said nose portion at a fixed longitudinal position thereof; sharpening means positioned within and rotatable with said cap when said cap is engaged on said barrel to sharpen said core when said core is urged forwardly into said sharpening means; releasable latch means normally engaging said feeding means to prevent said feeding means from moving said core longitudinally in said barrel; said latch means operatively connected with said cap while said cap is engaged on said barrel, said latch means being movable to the release position thereof to release said feeding means and permit said core to be moved forwardly when said cap is moved from said forward to said rearward position; said latch means being normally urged to engage said feeding means when said cap is moved from said rearward to said forward position by said feeding means and core.

8. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of the barrel to locate the forward end of the core exteriorly of the barrel; said barrel having a forwardly extending nose portion of predetermined outside diameter; a cap, said cap having an inside diameter substantially equal to but greater than said outside diameter, said cap defining an annular groove in the internal wall thereof, said groove being of predetermined longitudinal extent; a contractile ring rotatably mounted in said groove, said ring being normally urged to an inside diameter less than said outside diameter of said nose portion and being expandable to said outside diameter thereof, said contractile ring having a longitudinal width substantially less than said predetermined longitudinal extent of said groove, such that said cap is operatively mounted on said nose portion rotatable with respect thereto and longitudinally movable from a forward position to a rearward position relative to said barrel while said ring is engaged on said nose portion at a fixed longitudinal position thereof; releasable latch means normally engaging said feeding means to prevent said feeding means from moving said core longitudinally in said barrel; said latch means including an actuating member extending longitudinally of said barrel and operatively engaged by said cap at said rearward position thereof; said actuating member when engaged by said cap at said rearward position being positioned longitudinally to release said latch means from said feeding means to permit said feeding means to urge said core forwardly into said sharpening means; said actuating member being normally urged longitudinally of said barrel to move said latch means to said normal position at which said latch means engages said feeding means when said cap is urged to said forward position by said feeding means.

9. In a marking pencil: a barrel having means engaging a pencil core for supporting said pencil core against substantial rotation relative to said barrel while permitting said core to move axially with respect to said barrel; means within said barrel for engaging and feeding said core forwardly of the barrel to locate the forward end of the core exteriorly of the barrel; said barrel having a forwardly extending nose portion of predetermined outside diameter; a cap, said cap having an inside diameter substantially equal to but greater than said outside diameter, said cap defining an annular groove in the internal wall thereof, said groove being of predetermined longitudinal extent; a contractile ring rotatably mounted in said groove, said ring being normally urged to an inside diameter less than said outside diameter of said nose portion and being expandable to said outside diameter thereof, said contractile ring having a longitudinal width substantially less than said predetermined longitudinal extent of said groove, such that said cap is operatively mounted on said nose portion rotatable with respect thereto and longitudinally movable from a forward position to a rearward position relative to said barrel while said ring is engaged on said nose portion at a fixed longitudinal position thereof; sharpening means positioned within and rotatable with said cap when said cap is mounted on said nose portion to sharpen said core when said core is urged forwardly into said sharpening means; releasable latch means normally engaging said feeding means to prevent said feeding means from moving the core longitudinally in said barrel; said latch means including a U-shaped spring within said barrel, said spring having longitudinally extending legs and a base portion, said base portion defining an opening therethrough surrounding said feeding means, one of said legs being substantially longitudinally fixed within said barrel, the other of said legs being the actuating leg of said latch means, said actuating leg being longitudinally movable and normally

urged to a forward position with respect to said barrel, said base at said forward position of said actuating leg being in binding contact with said feeding means to prevent forward movement thereof, said actuating leg being rearwardly movable to release said feeding means to urge said core forwardly, said actuating leg being in bearing contact with said cap and moved to the rearward position of said leg at the rearward position of said cap; said actuating leg being normally urged to the forward position thereof when said cap is urged to the forward position thereof by said feeding means.

10. In a marking pencil: a barrel; means for supporting a pencil core in said barrel against substantial rotation relative to said barrel while permitting the core to move axially of said barrel; a cap; means mounting said cap on said barrel for rotation and for longitudinal movement on said barrel without rotation between a forward position and a maximum rearward position thereon; sharpening means positioned within and rotatable with said cap relative to said barrel to sharpen the core when said cap is in said rearward position; means within said barrel for feeding the core forwardly of said barrel to locate the forward end portion of the pencil core externally of the barrel and in said sharpening means; releasable latch means for preventing said feeding means from moving said core forwardly in said barrel; said cap being shiftable by manual force to said maximum rearward position and against said latch means to release the same; said mounting means embodying means permitting said cap to be shifted by said feeding means from said maximum rearward position to said forward position to allow reengagement of said latch means when said manual force on said cap is removed.

11. In a marking pencil: a barrel; means for supporting a pencil core in said barrel against substantial rotation relative to said barrel while permitting the core to move axially of said barrel; a cap; means mounting said cap on said barrel for rotation and for longitudinal movement on said barrel without rotation between a forward position and a maximum rearward position thereon; sharpening means positioned within and rotatable with said cap relative to said barrel to sharpen the core when said cap is in said rearward position; means within said barrel for feeding the core forwardly of said barrel to locate the forward end portion of the pencil core externally of the barrel and in said sharpening means; releasable one-way latch means engaging said feeding means to prevent said feeding means from moving said core forwardly in said barrel; said cap being shiftable by manual force to said maximum rearward position and against said latch means to release the same from feeding means; said mounting means embodying means permitting said cap to be shifted by said feeding means, when the manual force on said cap is released, from said maximum rearward position to said forward position and from operative relation to said latch means to allow reengagement of said latch means with said feeding means.

12. In a marking pencil: a barrel; means for supporting a pencil core in said barrel against substantial rotation relative to said barrel while permitting the core to move axially of said barrel; a cap; means frictionally mounting said cap on said barrel and permitting rotation of said cap on said barrel and limited longitudinal movement without rotation on said barrel between a forward position and a maximum rearward position; sharpening means in and rotatable with said cap relative to said barrel to sharpen the core when said cap is in said rearward position; means in said barrel for feeding the core forwardly of said barrel to locate the forward end portion of the core externally of the barrel and in said sharpening means; releasable latch means for preventing said feeding means from moving said core forwardly in said barrel; said cap being shiftable on said barrel by manual force to said maximum rearward position and against said latch means to release the same; said mounting means embodying means permitting said cap to be shifted by said feeding means, following removal of the manual force on said cap, from said maximum rearward position to said forward position to allow reengagement of said latch means.

13. In a marking pencil: a barrel member; means for supporting a pencil core in said barrel member against substantial rotation relative to said barrel member while permitting the core to move axially of said barrel member; a cap member; friction means mounted on and rotatable with respect to one of said members and frictionally engageable with the other of said members to enable positioning of said cap member on said barrel member in a maximum rearward position, said friction means having lost-motion with said one of said members to permit said cap member to shift from said maximum rearward position forwardly of said friction means and barrel member; sharpening means in and rotatable with said cap member relative to said barrel member to sharpen the core when said cap member is in said maximum rearward position; means in said barrel member for feeding the core forwardly of said barrel member to locate the forward end portion of the core externally of the barrel member and in said sharpening means; releasable latch means for preventing said feeding means from moving said core forwardly in said barrel member; said cap member being shiftable on said barrel member by manual force to said maximum rearward position and against said latch means to release the same; said friction means permitting said cap to be shifted by said feeding means, following removal of the manual force on said cap member, forwardly from said maximum rearward position to allow reengagement of said latch means.

References Cited in the file of this patent

UNITED STATES PATENTS

2,000,487	Koch	May 7, 1935
2,486,960	Mesh	Nov. 1, 1949
2,565,715	Becker	Aug. 28, 1951
2,606,527	Filak	Aug. 12, 1952
2,642,039	Filak	June 16, 1953
2,941,508	Spatz	June 21, 1960
2,979,029	Melnikoff	Apr. 11, 1961