

PATENT SPECIFICATION

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(19)



(54) WRITING IMPLEMENT BODY

(71) We, TEXTRON, INC., a corporation organised and existing under the laws of the State of Delaware, United States of America, of 40 Westminster Street, Providence, Rhode Island, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates generally to hand held instruments and more particularly to a writing or marking implement in which a replaceable unit is reciprocated between a concealed position and a point exposed position in response to relative rotation of two sections of the implement housing.

The prior art is replete with proposals for instruments of the type having a manually operated mechanism for reciprocating a writing or marking unit between a concealed position and a point exposed position. These proposals can be categorized generally into two basic groups. One group includes a push button or similar exposed element adapted to be pressed by the user to actuate the mechanism and move the unit. In the other group, the instrument holder includes a pair of coaxially aligned sections which are rotated relative to one another to actuate the mechanism and reciprocate the unit.

One of the features or advantages of the usual push button type instrument is the ease and convenience with which the cap and barrel are disassembled for removal or replacement of a spent or damaged unit. Almost without exception, in this type of instrument, the cap and barrel are coupled by a simple threaded connection adapted to be engaged and disengaged by a universally recognized and easily understood turning action.

In the past, attempts have been made to use the same simple type of threaded con-

nection to couple releasably the cap and barrel of an instrument having a rotating type mechanism. Unfortunately, these attempts have met with little or no success. Repeated actuations of a rotating type mechanism will tend to "unlock" the usual threaded connection even if it initially is tight, thereby resulting in inadvertent loosening of the cap and barrel. Thus, prior to the present invention, the advantages of a simple threaded cap/barrel connection have not been available in instruments having a rotating type mechanism.

It has been proposed to overcome this problem of inadvertent loosening by use of a coarse thread for the actuating mechanism and a fine thread for the cap/barrel coupling. The coarse thread is expected to have less "lock up" force than the fine thread, whereby the mechanism supposedly will operate with less rotary force than that required to loosen the cap/barrel coupling. However, even if the fine coupling threads are properly "locked up", repeated actuations of the mechanism will tend to effect their loosening.

As the writing instrument industry has not previously come up with a practical solution to this "loosening" problem, most commercially available rotary mechanism type instruments have utilized various "rear loading" structures, wherein removal of the cap exposes an adapter carried on the rearward end of the writing unit for releasable connection to a reciprocal follower portion of the mechanism. If it is desired to replace the unit, the adapter is unscrewed or detached from the follower and the unit withdrawn therethrough. The new unit is then inserted through the mechanism, and the adapter of the new unit attached to the follower. Reassembly of the cap then completes the unit replacement process.

Such "rear loading" instruments have had some commercial success, but not without

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creating additional problems. For instance, it has been necessary to limit their use to the so-called "capillary" type small diameter units which can be assembled through the mechanism. Otherwise, use of a large jumbo type unit would require enlargement of the diameter of the mechanism and holder to the point where the finished instrument would be uncomfortable and unwieldy for most users. Also, since the unit is attached to the mechanism follower, a special threaded adapter must be provided with each unit. This adapter not only increases the ultimate cost of the unit, but prevents its use in other types of instruments. Further, the process of replacing the unit is time consuming and complicated. Yet another problem is the necessity of having a unit of the proper size and with the proper adapter. If such a unit should not be available, other types or brands generally cannot be used. In addition, the usual "rear loading" type rotating mechanism is complicated and costly to produce and repair.

Therefore, it is a principal object of this invention to provide an improved writing, marking or similar implement having an operating mechanism of the rotary action type.

According to the present invention there is provided a writing or marking implement body, comprising an elongate housing having axially aligned barrel and cap sections rotatable relative to one another about the longitudinal axis of the housing, a cartridge unit disposed within said housing and reciprocable, relative to the housing, between a concealed position and a point-exposed position, by means of a mechanism located within said housing and comprising a first driving member rotatable with the barrel section and a second driving member rotatable with the cap section, the driving members being longitudinally fixed but rotatable relative to one another about the axis of the holder in response to rotation between said barrel and cap section, means for reciprocating the cartridge unit between its concealed and point-exposed positions in response to rotation between said driving members, the mechanism and the housing being releasably coupled together, whereby the housing may be dis-assembled to permit removal or replacement of the cartridge unit, by means of a generally tubular member extending between and threadedly connecting the mechanism and the barrel section, the tubular member having an end portion held in sliding wedged engagement with a tapered surface provided by a member inside the barrel, whereby the tubular member is retained against inadvertent disassembly under the rotary forces generated during repeated actuations of the mechanism.

In the preferred embodiment, the coupl-

ing includes a connector sleeve fixed within the barrel and provided with an annular collar extending into the cap. The outer periphery of the collar is spaced radially from the proximate interior surface of the housing and is provided with (i) a frusto-conical surface proximate the inner end of the barrel, and (ii) a thread portion extending into the cap. The frusto-conical surface has a relatively small angle of 3° - 7° with respect to the axis of the holder, and in combination with the radially proximate interior wall of the barrel forms a tapered annular recess facing toward the mechanism. Extending from one of the driving members into this annular recess is a tubular connecting member having a thread section and an open inner end. When the implement is assembled for use, the thread section and thread portion are engaged and the open end is wedged on the frusto-conical surface. In effect, this wedged engagement forms a "sliding lock" which prevents inadvertent loosening of the threaded engagement even when subjected to repeated actuations of the mechanism but which can be overcome by manual forced rotation between the connecting member and connecting sleeve should it be desired to separate the mechanism from the barrel for removal or replacement of the unit.

The other or second driving member operatively engages the interior surface of the cap and rotates in response to rotation of the cap. Preferably this operative engagement is of a frictional nature and of a magnitude which will permit manual removal of the cap rearwardly from the second driving member should it be desired to expose the mechanism without separating the mechanism and barrel.

The present invention will now be described by way of example with reference to the accompanying drawings, in which:-

Figure 1 is a longitudinal sectional view of an implement embodying the invention, showing the cartridge unit in an extended point exposed position;

Figure 2 is a fragmentary, longitudinal sectional view of a portion of the structure of Figure 1, but showing the unit in a retracted concealed position;

Figure 3 is an enlarged, fragmentary, longitudinal sectional view of the center section of the structure of Figure 1, showing in greater detail the coupling between the cap and barrel;

Figure 4 is a developed view of the interior of one of the driving members of the structure of Figure 1, showing the cam surface and contiguous offsets provided to reciprocate the unit and maintain the unit in its concealed and point exposed positions; and

Figure 5 is an enlarged, fragmentary, lon-

gitudinal sectional view of the coupling portion of another embodiment of this invention.

Referring now to the drawings and particularly to Figure 1, there is illustrated a writing or marking implement having a generally cylindrical housing 10, including a cap section 12 and an axially aligned barrel section 14. The open inner end of the cap 12 is of the same diameter as and contiguous with the open inner end of the barrel section 14, the lower or outer end of which is tapered to form a reduced tip opening 15.

The upper or outer end of the cap 12 has an inturned flange 16 adapted to receive an internally disposed clip mount 18. Projecting transversely from the clip mount 18 through an aperture 20 in the flange 16 is a support 22 from which depends a resilient clip arm 24 having the usual contact point or ball 26.

Mounted within the cap 12 proximate its outer end is a generally cup shaped liner or insert 28. This liner 28 includes a bottom portion 30 abutting the clip mount 18, and a tubular wall 32 concentric with and snugly engaging the interior of the cap 12. For a purpose which will be described in greater detail hereinafter, the wall 32 is provided with a plurality of longitudinally disposed splines or indents 34.

The liner 28 and the clip mount 18 are maintained in position by the head of a screw 36, the shank of which extends through aligned apertures in the bottom portion 30 and the mount 18 for threaded engagement with a decorative knob 38. The inner end of the knob 38 is provided with an annular shoulder which abuts the outer surface of the flange 16 and which forms a projection of reduced diameter snugly centered within the flange.

Disposed within the housing 12 is a cartridge unit 42 having an elongate reservoir 44 and an outwardly projecting point 46 of a diameter slightly less than that of the tip opening 15. In this connection, the drawings illustrate the unit 42 as having a ball point type point, but it will be understood that units having other types of points may readily be used in the implement herein described.

A coil spring 48 is disposed in the barrel section 14 around the forward portion of the unit 42, one end of the spring 48 stopping against the interior of the tapered portion of the barrel 14, with the other end engaging an offset or shoulder (not shown) on the unit 42. As will be readily understood, the spring 48 normally biases the unit 42 inwardly or upwardly toward a position wherein the point 46 is concealed within the tip opening 15.

A connector sleeve 50 includes a body portion 52 press fitted or otherwise fixed

against displacement in the barrel 14, and a central aperture 54 through which the unit 42 is freely movable. Extending upwardly from the body portion 52 and into the cap 12 is an annular collar portion 56, the outer surface of which is spaced radially from the proximate interior surface of the housing 10 and has a frusto-conical surface 58 and a screw-threaded portion 60. Preferably, the screw-threaded portion 60 is positioned adjacent the inner end of the collar portion 56 and spaced from the surface 58.

As will be seen readily from Figure 3, the taper of the frusto-conical surface 58 is relatively shallow, preferably being formed at about 5° with respect to the longitudinal axis of the implement. Further, it will be noted that this surface tapers toward and terminates about even with the open inner end of the barrel 14. Thus, the frusto-conical surface 58 and the radially proximate interior surface of the barrel 14 combine to form an annular recess 62 facing toward the cap 12.

Located within the cap 12 adjacent the rearward end of the unit 44 is an operating mechanism for reciprocating the unit between the concealed and point exposed positions described above. This mechanism includes a pair of axially fixed but relatively rotatable driving members 70 and 84 respectively. The first driving member 70 comprises a cylindrical sleeve preferably molded of a wear resistant, self lubricating synthetic resin such as nylon or DELRIN (Registered Trade Mark). As best shown in Figure 4, the sleeve 70 has a recess 72 formed in its interior wall, the recess opening toward the barrel 14 and defining a cam surface 74 inclined relative to the longitudinal axis of the implement and terminating in transverse offsets 76 and 78 and side walls 80 and 82. The cam surface extends approximately 180° around the interior of sleeve 70.

The second driving member 84 includes a hollow cylindrical portion 85 rotatably received in the sleeve 70 and provided with a longitudinally extending slot 86. At the upper or outer end of the cylindrical portion 85, there is provided an enlarged section 88 and a slightly reduced cylindrical flange 90 having a plurality of longitudinally disposed splines 91. The outside diameter of the flange 90 is slightly greater than the distance between the inside faces of the splines 34 of the liner 28 thereby providing a relatively tight frictional fit between the flange 90 and the wall 32 that operatively but releasably connects the cap section 12 and the second driving member 84. In this connection, if sufficient rotary force is exerted on the cap 12 to cause slippage between the flange 90 and the wall 32, the splines 91 will engage splines 34 to limit such slippage to only a few degrees of rotation. Such splines will

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not, however, interfere with manual removal of the cap 12 in a rearward direction should exposure of the operating mechanism be desired as, for example, to gain access to an eraser (not shown) which may be carried in the open outer end of the flange 90.

The enlarged section 88 provides an inwardly facing shoulder 92 that slidably receives the outer end of the first driving member 70. Mounted proximate the inner end of the cylindrical portion 85 and in sliding engagement with the inner end of the first driving member 70 is a thrust assembly consisting of a pair of spaced washers 94 having a spring ring 96 compressed therebetween. This assembly may conveniently be fixed against relative axial movement by crimping outwardly the extreme inner end 98 of the cylindrical portion 85. Thus, the washer/spring assembly, in combination with the shoulder 92, will restrain the driving members 70 and 84 against relative axial movement while permitting relative rotary movement therebetween. The pressure of this washer/spring assembly creates sufficient "drag" or resistance to movement between the driving members to ensure against looseness and inadvertent rotation therebetween as a result of normal handling or use of the implement.

A generally cylindrical follower 100 is slidably housed within the second driving member 84. A lug 102 extends from the follower 100 through the slot 86 in the driving member 84 and into a recess 72 for engagement with the cam surface 74, the transverse offsets 76 and 78 and the side walls 80 and 82 in the first driving member 70.

As a result of the previously discussed biasing action of the spring 48 the outer or rearward end of the unit 44 is maintained in abutting engagement with the inner or forward end of the follower 100. Thus, reciprocation of the follower 100 will cause concomitant reciprocation of the unit 44.

The operating mechanism is releasably coupled to the barrel 14 by a tubular connecting member 104 having an outer end telescoped over and rigidly fixed to the first driving member 70, as by being swaged or rolled thereon. Adjacent to but spaced a short distance from the open inner end 106 of the connecting member 104 is a rolled thread section 108 releasably engaged with the thread portion 60 of the sleeve 50.

When the thread portion 60 and the thread section 108 are fully engaged, the open inner end 106 of the connecting member 104 forms an annular contact surface disposed in the annular recess 62 in tight wedged engagement with the frusto-conical surface 58. Further to assure a good wedged engagement, at least one axially extending slot 110 may be cut through the

open end 106 and into the first one or two threads of the section 108. Thus, as the connecting member 104 and the connector sleeve 50 are threaded together, the open inner end 106 will expand radially over the frusto-conical surface 58 until coming in contact with the interior wall of the barrel 14. Such contact not only provides a supplemental wedging action but acts to form a stop for limiting longitudinal movement of the connecting member 104 toward the barrel section 14.

As will be apparent from the preceding description, the cap section 12 is releasably connected to and rotatable with the driving member 84, while the barrel section 14 is releasably connected to and rotatable with the driving member 70. Thus relative rotation between the holder sections 12 and 14 will cause conjoint relative rotation between the driving members 70 and 84 simultaneously reciprocating the follower 100 and the unit 44.

Referring particularly to Figure 4, it will be noted that when the unit 44 is disposed in its concealed position, the lug 102 of the follower 100 is positioned in contact with the transverse offset 76 and the side wall 80. This contact simultaneously limits relative rotary movement of the driving members in one direction and rearward movement of the unit. Upon relative rotation of the driving members in the other direction, the lug 102 is forced forwardly by the combined action of the slot 86 and the cam surface 74 until it is positioned in contact with the transverse offset 78 and side wall 82. This latter contact simultaneously limits rotary movement of the driving members in the other direction while maintaining the unit 44 in its extended position under the influence of writing pressure on the point 46.

In prior art devices, only a minute amount of rotary movement is required to lose the "locking" effect of the coupled threads. Thus, normal handling and use of such instruments, combined with the "hammer" effect of repeated actuations of the mechanism, will rapidly tend to loosen the coupling. In an implement embodying the present invention, however, the above described wedged engagement is effective to prevent inadvertent loosening of the coupling means (thread portion 60 and thread section 108) over a number of degrees of rotation of the parts. Thus, normal handling and repeated actuations of the mechanism will not cause loosening of the cap and barrel sections.

The unit 44 may, however, be removed and/or replaced easily by first retracting the unit to engage the lug 102 with the side wall 80 and then exerting additional rotary force in the same direction until the connecting member has rotated sufficiently to overcome

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the wedged engagement between the open inner end 106 and the frusto-conical surface 58. The cap and barrel sections 12 and 14 may then be easily disassembled to permit removal or replacement of the unit 44 through the open inner end of the barrel section 14. Reassembly of the cap and barrel sections is then accomplished by a simple threading action between the sections. In this connection, of course, it will be readily understood that the presence of the cap 12 is not required for removal or replacement of the unit 44, since the connecting member 104 and the associated mechanism may readily be disassembled from the barrel simply by grasping and rotating the connecting member.

As mentioned heretofore, a large diameter jumbo type unit 44 preferably is used in the present embodiment. However, for any one of several possible reasons, it may be desirable to use a smaller diameter capillary type unit. Thus, it will be understood that the present invention is not to be limited to any one size or type of unit. Also, as illustrated by Figure 5, it will be apparent that various other embodiments of the invention can be constructed.

In the Figure 5 embodiment, all parts and components not illustrated or described are substantially equivalent to the comparable parts and components as illustrated in connection with the preferred embodiment.

The barrel section 200 is provided internally of its open inner end with a thread portion 202 terminating in an inwardly tapering or sloping frusto-conical surface 204. Adjacent the base of the frusto-conical surface 204 is an annular recess 206 adapted to frictionally receive a tubular sleeve 208. The tubular sleeve 208 extends toward the open inner end of the barrel 200 and terminates approximately at the end of the thread portion 202 to define with the frusto-conical surface 204 an annular recess opening toward the cap section 210.

Extending inwardly from the actuating mechanism (not shown) is a connecting member 212 which is substantially the same as the above described connecting member 104, except that its contact surface or open inner end is radially restricted by the frusto-conical surface 204 during assembly of the cap and barrel sections 200 and 210.

WHAT WE CLAIM IS:-

1. A writing, or marking implement body, comprising an elongate housing having axially aligned barrel and cap sections rotatable relative to one another about the longitudinal axis of the housing, a cartridge unit disposed within said housing and reciprocable, relative to the housing, between a concealed position and a point-exposed position, by means of a mechanism located within said housing and comprising a first

driving member rotatable with the barrel section and a second driving member rotatable with the cap section, the driving members being longitudinally fixed but rotatable relative to one another about the axis of the holder in response to rotation between said barrel and cap sections, means for reciprocating the cartridge unit between its concealed and point-exposed positions in response to rotation between said driving members, the mechanism and the housing being releasably coupled together, whereby the housing may be dis-assembled to permit removal or replacement of the cartridge unit, by means of a generally tubular member extending between and threadedly connecting the mechanism and the barrel section, the tubular member having an end portion held in sliding wedged engagement with a tapered surface provided by a member inside the barrel, whereby the tubular member is retained against inadvertent disassembly under the rotary forces generated during repeated actuations of the mechanism.

2. An implement according to Claim 1, wherein the tubular connecting member is fixed to the first driving member and provided with a screw threaded section, and a connector sleeve carried by the barrel and provided with an annular screw threaded portion releasably engaging said screw threaded section.

3. An implement according to Claims 1 or 2, wherein the tapered surface is defined by a frusto-conical surface located within the barrel in a spaced relation with and facing toward the mechanism, and including an annular contact surface provided by the connecting member and disposed in the sliding wedged engagement with said frusto-conical surface.

4. An implement according to Claim 3, wherein the contact surface is formed at the open inner end of said connecting member.

5. An implement according to Claim 4, wherein the connecting member has an axially extending slot formed in the contact surface, the slot permitting radial deflection of the open end and contact surface in response to the wedged engagement.

6. An implement according to Claim 5, wherein the frusto-conical surface is positioned to radially restrict the slotted contact surface.

7. An implement according to Claim 5, wherein the frusto-conical surface is positioned to radially expand the slotted contact surface.

8. An implement according to any of the preceding claims, wherein the connector sleeve is fixed within the barrel section and includes an annular collar portion extending from within the barrel section into the cap section and has an outer surface spaced

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the wedged engagement between the open inner end 106 and the frusto-conical surface 58. The cap and barrel sections 12 and 14 may then be easily disassembled to permit removal or replacement of the unit 44 through the open inner end of the barrel section 14. Reassembly of the cap and barrel sections is then accomplished by a simple threading action between the sections. In this connection, of course, it will be readily understood that the presence of the cap 12 is not required for removal or replacement of the unit 44, since the connecting member 104 and the associated mechanism may readily be disassembled from the barrel simply by grasping and rotating the connecting member.

As mentioned heretofore, a large diameter jumbo type unit 44 preferably is used in the present embodiment. However, for any one of several possible reasons, it may be desirable to use a smaller diameter capillary type unit. Thus, it will be understood that the present invention is not to be limited to any one size or type of unit. Also, as illustrated by Figure 5, it will be apparent that various other embodiments of the invention can be constructed.

In the Figure 5 embodiment, all parts and components not illustrated or described are substantially equivalent to the comparable parts and components as illustrated in connection with the preferred embodiment.

The barrel section 200 is provided internally of its open inner end with a thread portion 202 terminating in an inwardly tapering or sloping frusto-conical surface 204. Adjacent the base of the frusto-conical surface 204 is an annular recess 206 adapted to frictionally receive a tubular sleeve 208. The tubular sleeve 208 extends toward the open inner end of the barrel 200 and terminates approximately at the end of the thread portion 202 to define with the frusto-conical surface 204 an annular recess opening toward the cap section 210.

Extending inwardly from the actuating mechanism (not shown) is a connecting member 212 which is substantially the same as the above described connecting member 104, except that its contact surface or open inner end is radially restricted by the frusto-conical surface 204 during assembly of the cap and barrel sections 200 and 210.

WHAT WE CLAIM IS:-

1. A writing, or marking implement body, comprising an elongate housing having axially aligned barrel and cap sections rotatable relative to one another about the longitudinal axis of the housing, a cartridge unit disposed within said housing and reciprocable, relative to the housing, between a concealed position and a point-exposed position, by means of a mechanism located within said housing and comprising a first

driving member rotatable with the barrel section and a second driving member rotatable with the cap section, the driving members being longitudinally fixed but rotatable relative to one another about the axis of the holder in response to rotation between said barrel and cap sections, means for reciprocating the cartridge unit between its concealed and point-exposed positions in response to rotation between said driving members, the mechanism and the housing being releasably coupled together, whereby the housing may be dis-assembled to permit removal or replacement of the cartridge unit, by means of a generally tubular member extending between and threadedly connecting the mechanism and the barrel section, the tubular member having an end portion held in sliding wedged engagement with a tapered surface provided by a member inside the barrel, whereby the tubular member is retained against inadvertent disassembly under the rotary forces generated during repeated actuations of the mechanism.

2. An implement according to Claim 1, wherein the tubular connecting member is fixed to the first driving member and provided with a screw threaded section, and a connector sleeve carried by the barrel and provided with an annular screw threaded portion releasably engaging said screw threaded section.

3. An implement according to Claims 1 or 2, wherein the tapered surface is defined by a frusto-conical surface located within the barrel in a spaced relation with and facing toward the mechanism, and including an annular contact surface provided by the connecting member and disposed in the sliding wedged engagement with said frusto-conical surface.

4. An implement according to Claim 3, wherein the contact surface is formed at the open inner end of said connecting member.

5. An implement according to Claim 4, wherein the connecting member has an axially extending slot formed in the contact surface, the slot permitting radial deflection of the open end and contact surface in response to the wedged engagement.

6. An implement according to Claim 5, wherein the frusto-conical surface is positioned to radially restrict the slotted contact surface.

7. An implement according to Claim 5, wherein the frusto-conical surface is positioned to radially expand the slotted contact surface.

8. An implement according to any of the preceding claims, wherein the connector sleeve is fixed within the barrel section and includes an annular collar portion extending from within the barrel section into the cap section and has an outer surface spaced

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radially from the proximate interior surfaces of said barrel and cap sections, the frusto-conical surface and the thread portion being formed on the outer surface.

9. An implement according to Claim 8 wherein the frusto-conical surface is disposed at an angle between 3 degrees and 7 degrees with respect to the longitudinal axis of the sleeve.

10. An implement according to Claim 9, including an annular recess formed by said frusto-conical surface and the radially proximate interior wall of the barrel section, said annular recess opening toward the mechanism and receiving the open inner end and the contact surface of the connecting member, the open inner end being held against the interior barrel surface when the contact surface is wedged on the frusto-conical surface.

11. An implement according to Claim 10, wherein the frusto-conical surface and the screw threaded portion are axially spaced apart on the said surface, the frusto-conical surface being located within the barrel proximate the inner end thereof and the screw-threaded portion extending into the cap.

12. An implement according to Claim 11, wherein the screw-threaded section is located on the connecting member in an axially spaced relation with the contact surface the axial distance between the screw-threaded section and the contact surface being less than the axial distance between the screw-threaded portion and the frusto-conical surface, whereby during coupling of the connector sleeve and the connecting member the screw-threaded engagement precedes the wedged engagement.

13. An implement according to Claim 12, wherein the connecting member is fixed to the first driving member and including a

flange provided by the second driving member and frictionally engaged with the interior of the cap section to connect the second driving member and the cap and means for restraining the cap section and the flange against relative axial rotation while permitting relative longitudinal sliding movement therebetween whereby the cap section may be selectively removed from said housing.

14. An implement according to any of the preceding Claims, wherein the first driving member comprises a generally cylindrical sleeve having a recess defining a helical cam surface toward the barrel section and a transverse offset at each end of the cam surface the second driving member comprises a hollow tubular shell rotatably housed within the first driving member and provided with a longitudinally extending slot; a follower longitudinally slidable within the tubular shell and including a lug extending transversely therefrom through the slot and into the recess for engagement with the cam surface and transverse offsets the slot and the cam surface conjointly acting on the lug and reciprocating the follower in response to relative rotary movement between the driving members, the lug engaging one of the transverse offsets when the unit is in the point exposed position and restraining the unit and the follower against movement toward the concealed position upon the application of pressure to the point of the unit.

15. An implement substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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