Sept. 23, 1952 F. M. AIMES 2,611,343

RETRACTABLE WRITING IMPLEMENT

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Fig. 1.

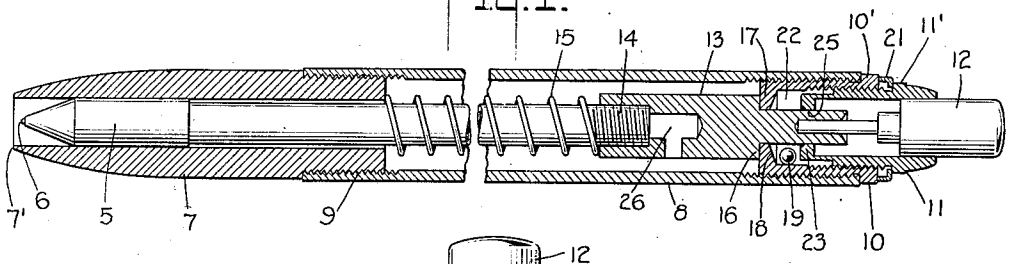
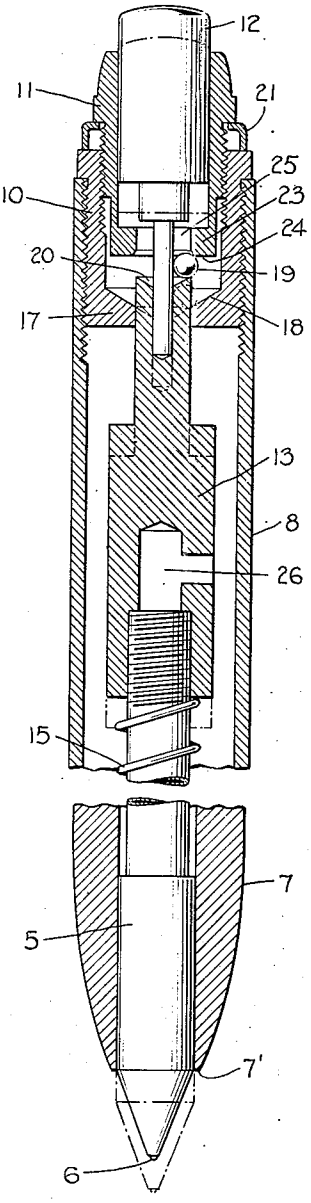


Fig. 2.



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RETRACTABLE WRITING IMPLEMENT

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4 Claims. (Cl. 120—42.03)

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This invention relates to writing implements, such as pens and pencils. More particularly, the invention deals with devices or implements of this kind wherein the writing element can be normally housed within the casing of the device and extended to writing position, means being provided to retain the device in said writing position. The novel features of the invention will be best understood from the following descriptions when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed, and in which the separate parts are designated by suitable reference characters in each of the views; and in which:

Fig. 1 is a longitudinal sectional view through a writing implement made according to my invention, with parts of the construction shown in elevation, and with parts broken away; and

Fig. 2 is a view similar to Fig. 1, on an enlarged scale, showing parts in a different position.

In illustrating one adaptation and use of my invention, I have shown a writing implement in the form of a pen. More particularly, what is known as the "ball-point" type of pen. In the drawing, 5 represents a ball-point writing unit or element having a ball writing point 6, the element being slidably mounted in a tubular body comprising a section 7 and tubular casing 8. The casing portion 8 has a threaded coupling engagement with the section 7, as indicated at 9. In threaded engagement with the other end of the casing 8 is a sleeve 10 internally threaded to receive a supplemental sleeve 11 in which a button type plunger 12 is slidably mounted. The plunger 12 is fixed to a cylinder or body 13, which has a sliding mounting in the sleeves 10 and 11 and extends into the casing 8.

The element 5 is detachably coupled with the cylinder or body 13, as indicated at 14. Mounted on the element 5, between the cylinder 13 and the inner end of the section 7, is a coil spring 15, which is tensioned to normally support the element 5 in the retracted position shown in Fig. 1. In other words, with the shoulder 16 of the cylinder abutting the inner end 17 of the sleeve 10.

The inner end of the sleeve 10 has a conical or tapered wall portion 18, providing a hopper or funnel-like feed of a ball check or lock element or member 19 onto the conical end 20 of the cylinder 13, as later described.

Arranged between the enlarged end 11' of the sleeve 11, and the corresponding enlarged end 10' of the sleeve 10, is a ring or collar 21. Assuming that the parts of the pen are generally composed of plastic materials, the ring or collar 21 may comprise a metal ring to take up abutment between the two sleeves and also to provide a more neat and finished appearance at the end of the writing implement. In this connection, it will also be understood that the several parts 7 and 8, as well as 10, 11 and 12, may be composed of different or contrasting colors, so as to produce any desired decorative effect.

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It will be seen that an annular chamber 22 is formed between the end 17 of the sleeve 10 and the corresponding end 23 of the sleeve 11. In this chamber, the ball or lock element 19 is arranged for free movement. The pen, as seen in Fig. 1 of the drawing, is in its normal retracted position, with the ball-point 6 disposed inwardly of the end 7' of the section. When it is desired to extend the writing element 5 to project the ball-point 6 in the manner shown in Fig. 2 of the drawing, the implement is moved into the vertical position illustrated in Fig. 2, and the plunger or button 12 is depressed to its fullest extent, as indicated in dot and dash lines in said figure. In so doing, the conical surface 18, or what I have termed the cone or hopper, is brought into registering alinement with the conical end 20 of the cylinder 13 and the ball or lock element 19 then rides down into engagement with the socket 20. Pressure is then released on the button 12 and the spring forces the mechanism upwardly until the ball or lock element 19 strikes the lower surface 24 of the end wall 23, as shown in full lines in Fig. 2 of the drawing, thus locking the pen in the writing position.

It will be noted from a consideration of Fig. 2, that the center of the ball or lock element 19 is disposed within boundaries of the socket 20, as well as within boundaries of the bore 25 in the end 23 of the sleeve 11. Thus, the ball or lock element becomes permanently retained in the locked position.

In order to again retract the element 5, all that is necessary is to move the pen to a horizontal or substantially horizontal position and to press inwardly on the button 12, freeing the ball or lock element 19 to drop into the chamber 22, and thus upon releasing the pressure, the element 5 will return to the position shown in Fig. 1.

The cylinder 13 has a passage 26 in the wall structure thereof for registration with the inner end of the element 5 for the purpose of refilling the pen without detachment of the element 5 from the cylinder 13.

From the foregoing, it will be apparent that the operation of the pen or writing implement is very simple, the only factors to be kept in mind is, that the implement must be moved into a substantially vertical position to bring the lock element 19 into position for locking the parts in extended position, whereas the parts can be returned to the normal retracted position shown in Fig. 1, by tilting the pen sufficient to release the ball or lock element 19 after spring pressure on the ball has been released.

The button 12 and body 13 can collectively be regarded as a plunger with which the element 5 is directly coupled. In other words, these parts are joined to operate as a single unit.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device of the class described, comprising

an elongated tubular body, a pair of sleeves arranged one within the other, the outer sleeve being mounted in said body, a writing element slidably mounted in the body and movable into retracted and writing positions, said element including a cylinder part movable in the outer sleeve, said element being normally contained within the boundaries of said body, a plunger slidably mounted in the inner sleeve and protruding from the end of said sleeve and directly coupled with said cylinder part by a reduced portion, a coil spring engaging said body and part to normally support the element within the other end of said body, wall portions of said sleeves, together with the cylinder part and reduced portion of the plunger forming an annular chamber around said part and reduced portion of the plunger, and a ball of such size as to permit free movement thereof longitudinally and circumferentially in said chamber, said cylinder part having a ball engaging, circular, conically recessed end surrounding the cylinder part, the outer sleeve having a conical recess exposed to said chamber for guiding said ball into the conical end of said cylinder part, said ball being adapted to be wedged between said conically recessed end of said part and the wall portion of the inner sleeve in supporting said element in extended writing position with respect to said body against the action of said spring, and said spring retracting said cylinder part when said ball is released from said wedged position.

2. An implement of the class described, a tubular casing having a section at one end, a pair of inner and outer sleeves at the other end of said casing, said sleeves having inner end wall portions arranged in spaced relationship to each other, a writing element slidably mounted in the section, said element having a cylinder part fixed thereto and slidably mounted in said sleeves, said part joining the element in a reduced stem, said stem forming, within said sleeves, an annular chamber having a recessed bottom wall, said cylinder part having a conically recessed end adapted to register with the conical bottom wall of said chamber, a ball of such size as to be freely movable in said chamber around said stem and adapted to be guided by said recessed bottom wall onto said conically recessed end when said wall and said end are in registry, said cylinder part being movable toward the end wall of the inner sleeve to retain said ball in a position between the conically recessed end of said cylinder part and the end wall of the inner sleeve to retain the writing element in extended writing position with respect to said section, and a coil spring between said section and cylinder part normally retaining said element in retracted position with respect to said section when said ball is released from its said retained position and moves into said annular chamber and tensionally supporting said section in said writing position when said ball is in its said retained position.

3. An implement of the class described, a tubular casing having a section at one end, a pair of inner and outer sleeves at the other end of said casing, said sleeves having inner end wall portions arranged in spaced relationship to each other, a writing element slidably mounted in the section, said element having a cylinder part fixed thereto and slidably mounted in said sleeves, said part joining the element in a reduced stem, said stem forming, within said sleeves, an annular chamber having a recessed bottom wall, said

cylinder part having a conically recessed end adapted to register with the conical bottom wall of said chamber, a ball of such size as to be freely movable in said chamber around said stem and adapted to be guided by said recessed bottom wall onto said conically recessed end when said wall and said end are in registry, said cylinder part being movable toward the end wall of the inner sleeve to retain said ball in a position between the conically recessed end of said cylinder part and the end wall of the inner sleeve to retain the writing element in extended writing position with respect to said section, a coil spring between said section and cylinder part normally retaining said element in retracted position with respect to said section when said ball is released from its said retained position and moves into said annular chamber and tensionally supporting said section in said writing position when said ball is in its said retained position, and a button fixed to said cylinder part and projecting through one of said sleeves for manual actuation of said element into extended writing position.

4. A writing implement of the class described, comprising a casing having a section at one end and a button-type plunger at the opposite end, a writing element slidably mounted in said section and movable into retracted and writing positions, a cylinder part fixed to said element, said plunger having a reduced portion coupled with said cylinder part, a coil spring engaging said part and section to normally support the element in retracted position within said section with the plunger projecting from the casing, said cylinder part having a conically recessed end around the reduced portion of the plunger, a freely movable lock member, means including a wall in the section confining movement of the lock member to an area adjacent the recessed end of said cylinder part in said positions of said writing element, said cylinder part being movable with said element toward and away from said wall in the movement of said element to said positions, and said last named means including means to direct said lock member upon said recessed end whereby when said cylinder part moves toward said wall said lock member is retained in a position between the recessed end of the cylinder part and said wall of said confining means to retain the element in extended writing position against the action of said coil spring, said lock member being releasable from its said position when said cylindrical part moves away from said wall, whereupon said element is free to be moved by said coil spring into said retracted position.

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