Sept. 26, 1967 G. W. KIRKLEN 3,343,293

WRITING INSTRUMENT PROVIDED WITH DISPLAY FEATURE

Filed Sept. 10, 1965

FIG. 1

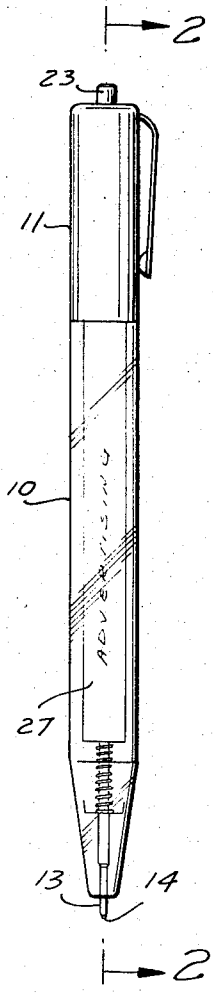


FIG. 2

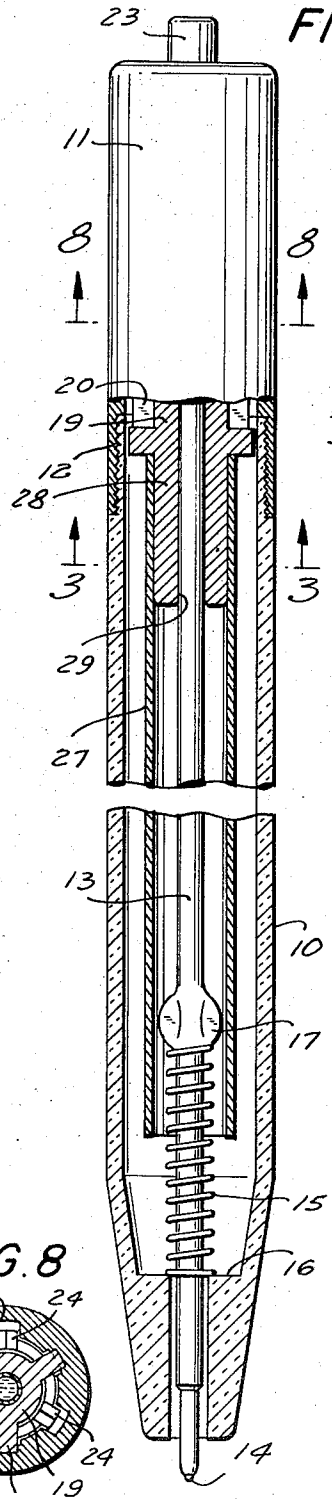


FIG. 4

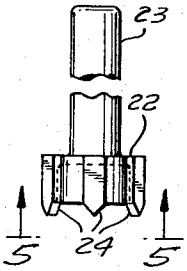


FIG. 6

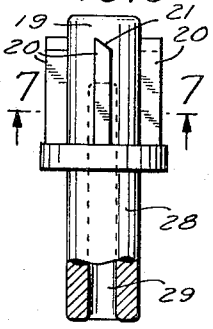


FIG. 5

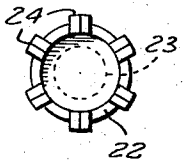
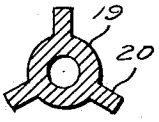


FIG. 7



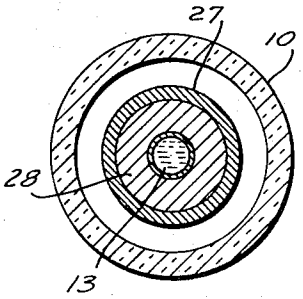


FIG. 3

FIG. 9

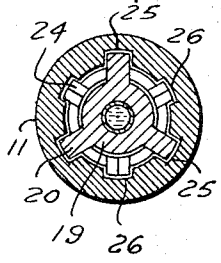
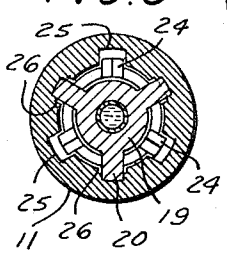


FIG. 8



INVENTOR:
GEORGE W. KIRKLEN
BY Breitenfeld & Levine
ATTORNEYS

United States Patent Office 3,343,293
Patented Sept. 26, 1967

3,343,293

WRITING INSTRUMENT PROVIDED WITH DISPLAY FEATURE

George W. Kirklen, 754 Manchester Drive, Chattanooga, Tenn. 37415

Filed Sept. 10, 1965, Ser. No. 486,428
4 Claims. (Cl. 40—334)

ABSTRACT OF THE DISCLOSURE

The invention relates to an improved means for attaching advertising indicia to the ratchet member of the mechanism of a project-retract pen.

This invention relates generally to writing instruments of the type in which a cartridge is axially shiftable within a barrel so that its end can be advanced and retracted from the writing end of the barrel.

It is a general object of the invention to provide an improved means for allowing advertising or equivalent indicia to be displayed through a barrel having at least one part that can be seen through.

A more particular object of the invention is to provide a construction which permits certain writing instruments of commonly employed type to be readily converted to embody the advertising or display feature referred to. Heretofore instruments provided with such display exhibiting means have required the employment of cartridges of special design. In accordance with the present invention it is possible at very low cost and with a minimum of adjustment to incorporate a display feature with instruments of otherwise conventional design which can continue to utilize cartridges of the ordinary kind.

It is a more specific objective of the invention to provide a novel arrangement of parts by means of which the cartridge-advancing and -retracing mechanism is utilized in an unusually simple and effective way for activating the display means.

The cartridge movements of writing instruments are commonly brought about by an actuating mechanism which includes a cup-shaped ratchet-like element accommodating and surrounding the rear end of the cartridge. It is ratchet-like (and is commonly referred to by the term "ratchet") because it moves arcuately in a stepwise manner during the course of its axial movements. The axial movements bring about a latching and unlatching of the ratchet (and cartridge) in an advanced position. A feature of the present invention resides in securing the rear end of a display-carrying sleeve to this ratchet, the sleeve coaxially surrounding the cartridge and bearing indicia on its external surface for exhibition through the barrel. The securement of the display bearing sleeve to the ratchet does not affect or alter the basic nature or mode of functioning of the actuating mechanism, and does not interfere with the continued accommodation and use of the conventional low-cost cartridge.

The preferred way of achieving these objects, and such other objects and advantages as may hereinafter be pointed out, is illustrated in the accompanying drawings, in which—

FIGURE 1 is a side view of a writing instrument embodying the feature of this invention;

FIGURE 2 is an enlarged cross-sectional view along the line 2—2 of FIG. 1;

FIGURE 3 is a cross-sectional view along the line 3—3 of FIG. 2;

FIGURE 4 is a side view of the actuator by itself;

FIGURE 5 is an end view in the direction 5—5 of FIG. 4;

FIGURE 6 is a side view of the ratchet by itself;

FIGURE 7 is a cross-section on line 7—7 of FIG. 6;

FIGURE 8 is a cross-sectional view substantially along the line 8—8 of FIG. 2; and

FIGURE 9 is a view similar to FIG. 8, showing the relationship of the parts when the cartridge is retracted.

The instrument chosen for illustration has a barrel formed of forward and rearward cylindrical sections 10 and 11, separately connected by screw threads 12. The forward section 10 has at least one part that defines a window, and in the device illustrated the entire section 10 is made of transparent material such as plastic. At its forward end it is tapered. The rear section 11 is preferably of opaque material.

The barrel is of course hollow, and mounted within it is the conventional cartridge 13 provided at its forward end with a writing tip 14. A compression spring 15 encircles the cartridge near its front end. It rests upon an inturned shoulder 16 in the barrel and presses rearwardly against a crimped enlargement 17 formed on the cartridge in the usual way. The cartridge is constantly spring-pressed in a rearward direction, and a mechanism at the other end of the barrel advances the cartridge 13 and latches it in advanced position (as shown in FIGS. 1 and 2), or unlatches it to allow the spring 15 to move it to its retracted position.

The actuating mechanism is preferably accommodated in its entirety within the confines of the opaque rearward section 11 of the barrel. The general nature of such actuating mechanism is known, and its mode of operation will be briefly described with reference to FIGS. 4–9.

The rear end of the cartridge 13 fits into the central opening 29 in the cup-shaped ratchet 19 (FIGS. 6 and 7). On the external surface of the ratchet 19 there are several (in this case, three) "teeth" or ribs 20. They are equally spaced in circumferential direction (in this case, at intervals of about 120 degrees), and at their rear ends they are provided with slanting surfaces 21. The slants are all in the same direction.

The cartridge 13 may fit snugly or loosely into the ratchet 19, but the ratchet is in any case an element entirely separate from the cartridge. The latter may therefore be readily replaced by another cartridge of the conventional kind shown, whenever desired.

Cooperating with the ratchet 19 is an actuator 22 (FIGS. 4 and 5) having a rearwardly extending stem 23 and a cup-shaped part which fits coaxially over the rear end of the ratchet 19 in rotationally slidable relation. The actuator 22 carries circumferentially spaced teeth 24. There are twice as many teeth 24 as there are ribs 20, and in the device shown the teeth 24 are six in number. They are equally spaced circumferentially (in this case, by about 60 degrees) and their forward ends are slanted or attenuated, as shown, for cooperation with the rearwardly directed slanted surfaces 21 on the ratchet 19. The stem 23 projects out of the barrel for engagement by the user of the instrument.

Referring now to FIGS. 8 and 9, it will be observed that the rear section 11 of the barrel is provided on its interior surface with a multiple number of equally spaced longitudinal channels. They correspond in number (in this case, six) to the number of teeth 24 on the actuator 22. The channels are alternately relatively shallow and relatively deep. The deeper ones are designated 25 in FIGS. 8 and 9, the shallow ones 26. Between the channels, at their forward ends, are forwardly directed shoulders which are slanted in the same direction as the surfaces 21.

The teeth 24 are of a size which allows them to fit slidably within the channels 25 and 26. They remain constantly within their respective channels, and there is never any rotative movement of the actuator 22.

The ribs **20**, however, are of such radial extent that they can fit only into the deeper channels **25** as shown in FIG. 9.

The channels **25** and **26** extend forwardly for only a limited distance. This distance is such that when the actuator **22** and ratchet **19** are pushed fully forward the ribs **20** lie wholly unconfined, in advance of the channels. Accordingly, when the ribs **20** are in alignment with the channels **25** (and there is no pressure on the actuator **22**) the ratchet **19** can move into a fully rearward position under the urgence of the spring **15**. The cartridge is then in retracted position. When pressure is exerted upon the actuator stem **23** the ratchet **19** is pushed forward, and as the ribs **20** leave the channels **25** the camming action of the teeth **24** upon the slanted rear surfaces **21** of ribs **20** causes the ratchet **19** to rotate through an arcuate increment. When the actuator is released the ratchet **19** moves rearward. The rear surfaces **21** encounter the forwardly directed shoulders between the channels **25**, **26** and are cammed into alignment with the shallower channels **26**. Since the ribs **20** cannot enter these channels the rearward movement of the ratchet **19** is halted (FIG. 8), and the effect of this is to latch the ratchet **19** (and the cartridge **13**) in the advanced position. Upon renewed pressure on the actuator **22**, three of the teeth **24** encounter the slanted surfaces **21** on the ribs **20** and again cause an arcuate movement of the ratchet **19**, but this time when pressure is released and the ratchet **19** moves rearward the slanted surfaces **21** are cammed by the shoulders between the channels into alignment with the deeper channels **25**. This allows the ratchet **19** to complete its rearward movement and thus bring about retraction of the cartridge **13**. Thus the cartridge is alternately advanced and retracted as the actuating mechanism continues to be manipulated.

In effect, the actuating mechanism causes latching and unlatching of the cartridge in its advanced position, and the operation is accompanied in each case by axial and arcuate movements of the ratchet. If the cartridge is snugly fitted within the ratchet it will partake of the rotative movements as well as the axial movements.

Surrounding the cartridge **13** is an elongated sleeve **27** which bears display notations or indicia on its exterior surface. In accordance with this invention its rear end is secured to the ratchet **19** so that the sleeve **27** moves with the latter. The preferred securement is brought about by forming the ratchet **19** with a special cylindrical extension **28** on its forward end, this extension having an axial bore **29** to permit passage of the cartridge **13** through it, and an outer surface to which the rear end of the sleeve **27** is attached. The attachment may be frictional in character by establishing a snug fit.

The entire ratchet **19** is preferably made of a single molding of plastic or the like, and the extension **28** can be an integral part of it. The ribs **20** lie adjacent to only the closed end of the ratchet **19**, and the longitudinal extent of the special extension **28** provides an outer surface with which the rear sleeve end engages.

The indicia on the sleeve **27** can be arranged in any desired manner. Where the barrel section **10** is wholly transparent the entire display is visible at all times, and the attractiveness of the device is achieved by the axial and arcuate movements of the sleeve **27** as the actuating mechanism functions. If desired, a lesser area of the section **10** may be made to serve as a see-through window.

In applying the display feature to a writing instrument employing the usual ratchet of the character described (i.e., without the extension **28**), it is merely necessary to furnish a transparent barrel section if one is not already in use, and to replace the conventional ratchet with one having the extension **28**. Any one of various display sleeves **27** can then be selectively attached and the barrel sections reassembled. A replacement of the display sleeve **27** can be similarly brought about, by merely temporarily separating, then re-connecting, the barrel sections.

It is to be particularly noted that a conventional cartridge can be used, and its replacement effected from time to time, in accordance with common practice, and that no special cartridge construction or use are called for. This contributes materially to the low cost of manufacture, to the low cost of continued use of an instrument employing the invention, and to the ease with which the benefits of the invention can be achieved.

It will be understood that many of the structural details described and illustrated may obviously be altered without necessarily departing from the spirit and scope of the invention as expressed in the appended claims.

What is claimed is:

1. In a writing instrument, a barrel provided with at least one window part, a cartridge mounted in the barrel for advancement and retraction from the writing end of the barrel, a spring surrounding the cartridge and urging it rearward, an actuating mechanism for latching and unlatching the cartridge in its advanced position, said mechanism including a cup-shaped ratchet surrounding the rear end of the cartridge and moving both axially and arcuately during operation of said mechanism, said ratchet being an element entirely separate from said cartridge, an elongated sleeve coaxially surrounding said cartridge, said sleeve being unconnected to said cartridge and being secured at its rear end to said ratchet for movement with the latter, and indicia on the external surface of said sleeve positioned to show through said window the independence of said cartridge of both said ratchet and said sleeve permitting the cartridge to be removed and replaced without disturbing said sleeve and ratchet.

2. A writing instrument as defined in claim **1**, in which the securement of said sleeve to said ratchet is effected by a cylindrical extension on the front end of the ratchet provided with an axial bore to permit passage of the cartridge through it and having an outer surface to which the rear sleeve end is attached.

3. A writing instrument as defined in claim **2**, in which said ratchet is an element of molded plastic and said cylindrical extension is an integral part thereof.

4. For use with a writing instrument of the character described, a cup-shaped ratchet adapted to accommodate the rear end of a cartridge and having longitudinally arranged circumferentially spaced ribs adjacent to its closed end, the outer surface of the ratchet adjacent to the open end being longitudinally extensive enough to engage the rear end of an elongated display sleeve and an elongated display sleeve bearing indicia on its outer surface and coaxially encircling and secured to the forwardly projecting part of said ratchet.

References Cited

UNITED STATES PATENTS

2,896,348	7/1959	Herne	40—334
2,971,283	2/1961	Parker	40—334
3,191,329	6/1965	Shea	40—334

FOREIGN PATENTS

930,464	7/1963	Great Britain.
957,109	5/1964	Great Britain.

LAWRENCE CHARLES, *Primary Examiner.*