

[54] **WRITING IMPLEMENTS**

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[51] Int. Cl. B43k 7/12

[58] Field of Search 401/117, 104, 59,
401/94; 15/429-434

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[57] **ABSTRACT**

A captive shielding cap for a writing implement such as a ball point pen, having a retracted position in which the writing end of the implement is exposed and a projected protective position for shielding the writing end of the implement.

5 Claims, 6 Drawing Figures

[56] **References Cited**

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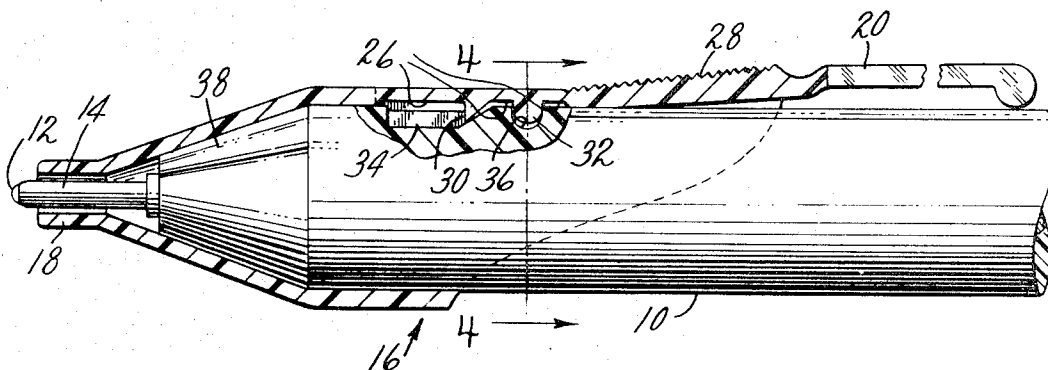


Fig. 1

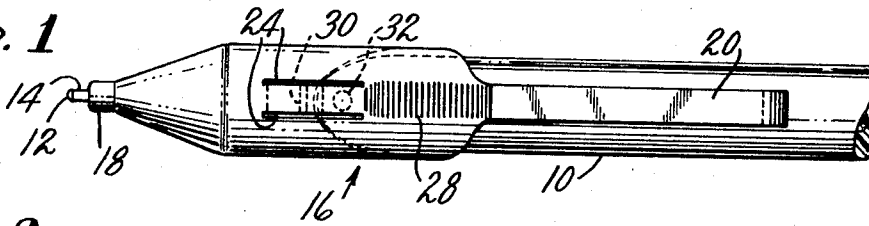


Fig. 2

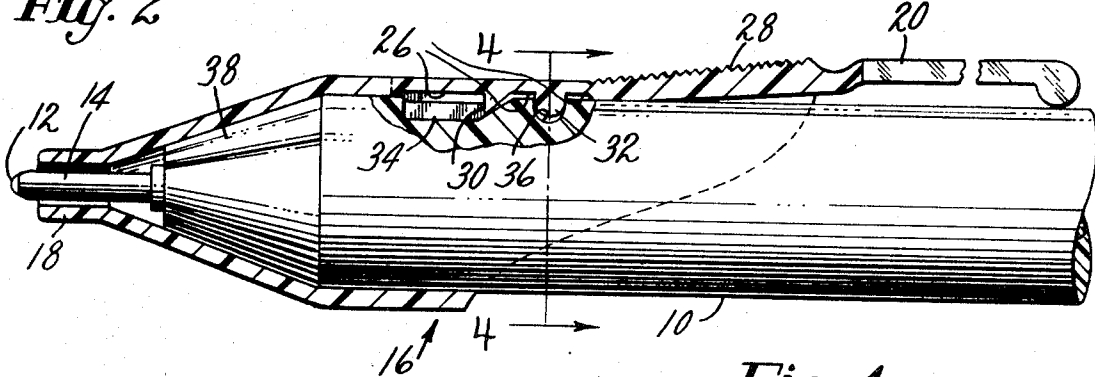


Fig. 3

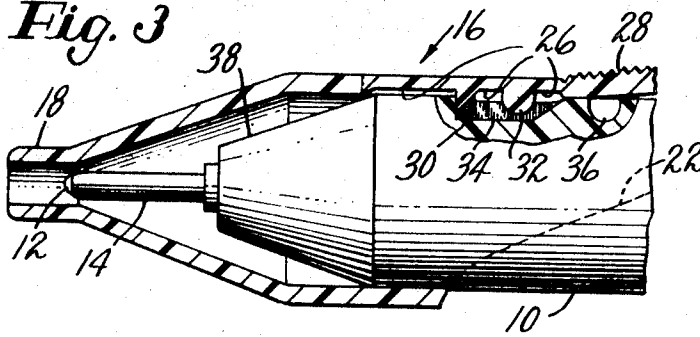


Fig. 4

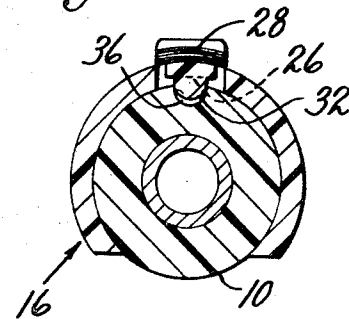


Fig. 5

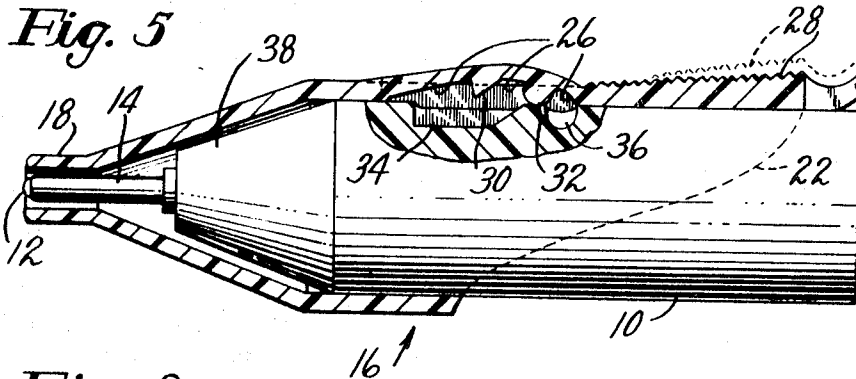
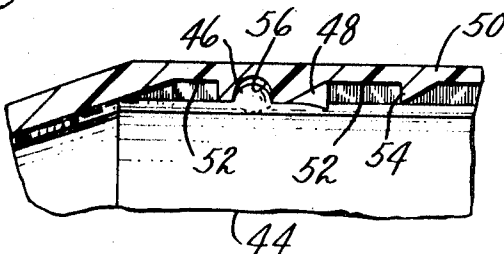


Fig. 6



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WRITING IMPLEMENTS

The present invention relates generally to improvements in writing implements such as ball point pens and more particularly to protective caps for such writing implements.

While the present invention is applicable to writing implements other than ball point pens, as will hereinafter be realized, the primary application is to pens and the benefits of the invention will accordingly be explained with reference to such pens.

There are commercially available ball point pens of two basic designs; one, a retractable construction and the other a unitary construction. The retractable construction comprises a multi-part outer shell in which there is mounted a cartridge or refill movable between an exposed writing position in which it is locked and a retracted protected position. Such pens are relatively expensive since they contain a number of component parts and require assembly of these parts at the time of manufacture.

The second type of ball point pen is the unitary construction in which all the parts are relatively fixed except for a cap which covers the writing end of the implement when it is not in use. Such a construction is relatively simple and accordingly inexpensive to manufacture. However, a great disadvantage is that the cap almost always becomes separated from the pen thereafter carrying the unshielded pen not only results in the impairment of its writing qualities but more importantly frequently causes serious stains in clothing, not readily removed.

It is therefore an object of the present invention to provide a reliably shieldable writing implement without incurring the relative expense inherent in multi-part retractable designs.

A more particular object is to provide a relatively inexpensive cap mountable on a ball point pen in such a way that after a relatively simple assembly operation, the cap remains captive upon the body of the pen.

Still another object is to provide a captive cap means coupled to pen barrels of generally conventional design without the need for expensive modifications of such conventional pen barrels.

In the achievement of the foregoing objects, a feature of the invention relates to a unitary, moldable, apertured cap including a retaining pawl and a locating ball which cooperate with a shallow two-part socket formed in the pen body. The cap, which is preferably formed with an integral retaining clip, is contoured to provide a comfortable grip and an unshaking fit upon the pen barrel. In addition, the longitudinal contour of the cap is such that internal retaining and positioning features are readily produced with simple molds.

The foregoing objects and features of the invention together with many advantages derived from its use will be more readily understood from the following detailed description of an illustrative embodiment taken in connection with the accompanying drawings in which:

FIG. 1 is a longitudinal view of a pen and cap according to the invention with the cap shown in retracted or writing position;

FIG. 2 is a view of the pen of FIG. 1 but on an enlarged scale and with the cap which is also retracted shown in cross section to illustrate its interior construction;

FIG. 3 is a fragmentary detailed view showing the writing end of a pen and cap with the cap shown in projected shielding position;

FIG. 4 is a view in cross section taken along the line 4—4 of FIG. 3;

FIG. 5 is a view the writing end of the pen depicting the cap being shifted between protracted and retracted positions; and

FIG. 6 is an illustration of an alternative construction within the scope of the invention.

Turning now to the drawings, there is shown a ball point pen comprising a barrel or body 10 containing an ink supply for a writing ball 12 mounted in a tubular extension 14. The barrel 10 is shown to be cylindrical but may actually be of some other cross section such as a commonly employed hexagonal shape, for example. The thinned tubular extension 14 may similarly be replaced by a tip of generally conical shape, by a writing quill or by pen nib. It will hereafter be readily appreciated that minor adjustments in construction will accommodate variations in writing implement structure.

There is mounted on the pen barrel 10 a captive cap indicated generally at 16 which includes a tubular shield portion 18 through which the extension 4 is projected and exposed for writing and into which it is retracted to protect the ball 12. In addition the cap 16 includes a unitary clip 20 for securing the pen to an article of clothing for example. It will be noted that the cap 16 is considerably longer on the side of the clip 20 than on the opposite side, the right hand edge of the cap that which is uppermost when the pen is in writing position being depicted in the drawings at 22 in FIGS. 3 and 5 sloping in a curve downwardly and leftwardly. The cap edge contour is not only economical in terms of materials but also facilitates the molding of the interior features of the cap which will now be described.

Generally in line with the clip 20 there is in the cap a thinned rectangular area defined laterally by a pair of slits 24, the thinned area being denoted by the reference numeral 26 in FIGS. 2, 3 and 5. It is seen particularly from FIG. 2 that a serrated area 28 extending between the inward end of the slits 24 and the junction of the clip 20 to the cap body is thicker for greater rigidity than the remainder of the cap and is also spaced slightly from the pen barrel 10. The combination of the increased thickness and the spacing permit the release of the cap for movement between protracted and retracted positions.

The interior of the cap 16 is formed in the thinned area 26 with a pawl 30 and a detent ball 32 molded integrally with the thinned section 26. Cooperating with the pawl 30 and the ball 32 are a shallow groove 34 and a detent socket 36 in the barrel 10. The outward end wall of the groove 34 is perpendicular to the axis of the pen barrel whereas the inward end wall is inclined. The cap 10 is preferably molded of a plastic substance such as polyethylene or polypropylene containing sufficient plasticizer to impart the necessary flexibility to the cap particularly in the thinned area defined by the slots 24 where the pawl 30 and the ball 32 are located. Conventionally, the barrel 10 would be cut to length from tubing while in a heated condition. It is a simple matter at the time of cutting when the end of the barrel nearest the tubular extension 14 is being tapered shown at 38, also to form the groove 34 and socket 36 with appropriate punches without adding appreciably to the cost of manufacturing the pen body. At the time of assembly

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of the cap 16 to the barrel 10, the inner sloping surface of the pawl 30 rides up the taper 38, over the body 10, and drops into the groove 34 as shown in FIG. 3. In this position the writing ball 12 is covered by the shield portion 18. In order to retract the shield and to lock it in retracted position, the serrated area 28 is pressed toward the pen body as shown in FIG. 5, which causes the thinned area 26 to be deformed upwardly carrying the ball 32 out of the groove 34 and as the cap is drawn rearwardly the ball enters the socket 36.

There is shown in FIG. 6 an alternative construction including a pen body 44 shown only fragmentarily and having coined features to cooperate with an appropriate cap. The coined features include a hemispherical projection 46 and a triangular wedge shaped boss 48. An appropriately formed cap 50 including a thinned area 52 also laterally bounded by the equivalent of the slots 24 has integrally molded in the thinned area a pawl 54 and a hemispherical socket 56. At assembly the sloping surface of the pawl 54 slides over the hemispherical projection 46 and the boss 48, the outer perpendicular surface of the pawl becoming locked behind the inward surface of the boss which is also perpendicular to the axis of the pen body. In shifting the cap 50, it is deformed in a manner similar to that shown in FIG. 5 for the cap 16 to permit the cap surface shown in contact with the sloping surface of the boss 48 to be moved to the left of the hemispherical projection 46 in order to shield the writing ball of the pen.

The foregoing embodiments have been described by way of illustration and are not to be construed as limitations of the invention which is susceptible to rendition in metals as well as in plastic and is applicable with

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slight modifications to writing implements other than ball point pens. Accordingly, the scope of the invention will be defined solely by the appended claims.

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

1. A writing implement comprising an elongated body having a writing end and a pair of indentations spaced apart along the length of the body, a deformable centrally perforated unitary cap molded of synthetic plastic material, internal means including an integral projection of limited circumferential extent inside and intermediate the ends of the cap engageable with the indentations for slidably but captively retaining the cap on the pen body and for retaining the cap in a retracted position in which the writing end is exposed.

2. A writing implement according to claim 1 further characterized in that the retaining means for the cap includes a groove formed in the pen body and a pawl inside the cap adapted to enter the groove.

3. A writing implement according to claim 2 further comprising a socket formed in the body and a ball integral with the cap and adapted to engage the socket when the cap is retracted.

4. A writing implement according to claim 1 further characterized in that the cap is formed with an open end defined by an uninterrupted edge.

5. A writing implement according to claim 4 further characterized in that the cap is deformable to permit outward displacement of the projection for movement of the cap between the retracted position and a protective position.

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