June 29, 1965 W. SHEA 3,191,329

DISPLAY CAP BALL-POINT PEN

Filed June 21, 1963

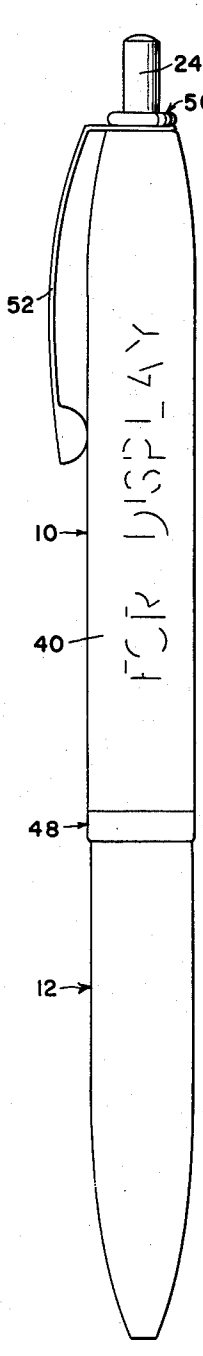


FIG. 1

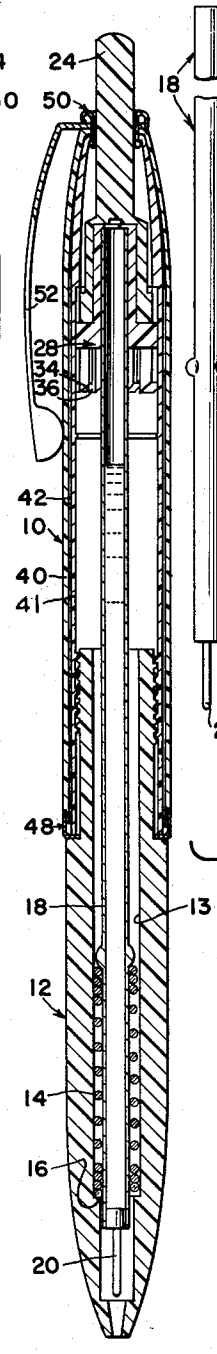


FIG. 2

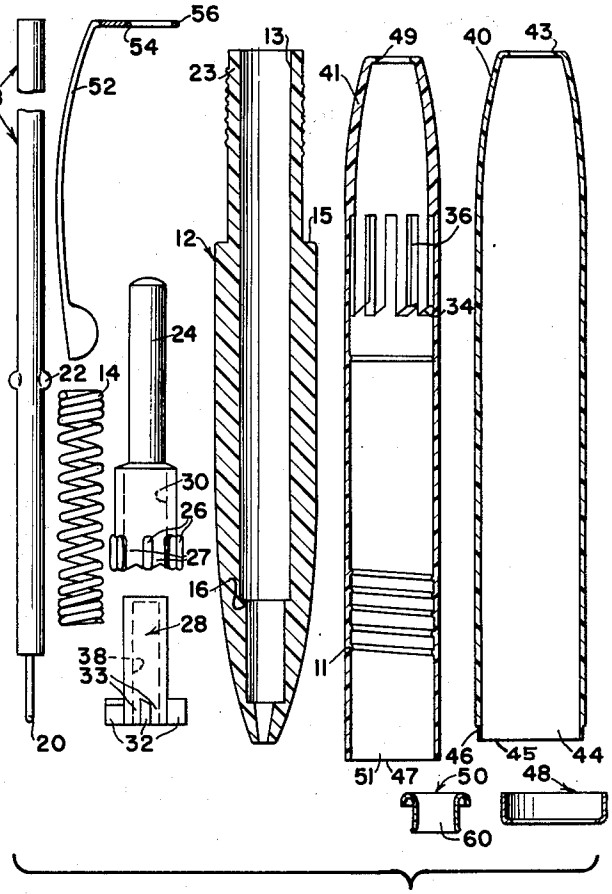


FIG. 3

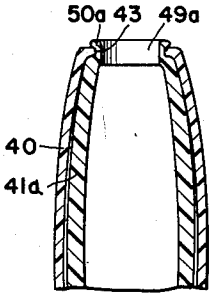


FIG. 4

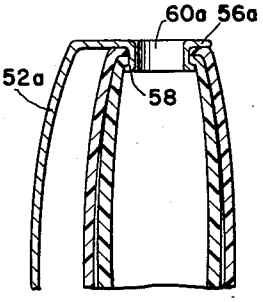


FIG. 5

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DISPLAY CAP BALL-POINT PEN

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This invention relates to a ball-point pen, and more particularly to a pen provided with an internal arrangement for displaying printed or colored materials.

Display pens are desirable for carrying messages or for ornamental reasons. Printing on the outside of the pen is subject to constant wear which eventually causes illegibility of the printing or ornamentation.

If the display material is simply inserted under the barrel, it is free to move, and sometimes is lost to view. Where a pocket was provided, a split barrel or grooved sleeve generally was used which were neither dust proof nor easy to manufacture.

In Patents Nos. 3,077,691 and 3,077,692, I provided a pen barrel with an anchored inner sleeve upon which the printed message or decoration was placed. Alternatively a separate display sheet was wrapped upon the sleeve before insertion into the barrel.

I have found however that during use, when displayed in the barrel of the pen, the advertising material is hidden by the fingers.

Accordingly, it is an object of the present invention to provide a display pen wherein the display is exposed to view even when the pen is in use. This may be in addition to the display space, if provided, in the barrel.

The foregoing object of the invention can be accomplished by placing the display within the cap of the pen. However, placing an inner sleeve into the cap as was done in the barrel, requires an accommodation for the complicated shapes on the inner surface of the cap in most types of projects and retract mechanisms. The principal object of the invention was solved by providing an auxiliary cap, and forming a compartment between the auxiliary cap and the cap itself for the display material.

Further objects consist in providing a novel anchoring means for the auxiliary cap; forming a novel seal for the compartment against moisture and dust; providing for a hollow anchoring means; arranging for a suitable clip on the auxiliary cap; and accomplishing all the foregoing objects in a pen adapted for mass production on high speed equipment to obtain maximum economy in manufacture.

These and other objects are accomplished and new results obtained as will be apparent from the pen described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing in which:

FIG. 1 is front elevation of the display cap ball-point pen incorporating the invention.

FIG. 2 is a longitudinally sectioned view of the same.

FIG. 3 is an exploded view of the pen showing the various parts.

FIG. 4 is a modification of the auxiliary cap anchoring structure.

FIG. 5 is still another modification of the same.

Referring more in detail to the drawing, reference numeral **10** designates the display cap of the ball-point pen, which is ordinarily threaded at **11** to attach it to the barrel.

The barrel **12** contains an internal bore **13** for the spring **14** seated on the ledge **16**, the centrally positioned writing cartridge **18** having the writing point **20**, and ears **22** for compressing the spring against the ledge **16**. The barrel is externally threaded at **23** to engage threads **11** of the cap.

The cap **10** contains a push plunger project-retract mechanism which may comprise the push plunger **24** terminating in a circular set of teeth **26**; an inner rotatable shaft **28** seated within the recess **30** of the plunger **24**; and a set of teeth **32** mounted on the shaft **28** and engaging the teeth **26**. The teeth **32** extend slightly beyond teeth **26** to engage projecting teeth **34** moulded on the inside surface of the cap. Between the teeth **34** of the cap, grooves **36** are provided to permit teeth **32** to slide therein when moved into proper position by the push plunger **24**. The grooves **33** between teeth **32** on shaft **28**, and grooves **27** between teeth **26** on plunger **24**, permit teeth **32** and **26** to be accommodated in grooves **36**. Thus the shaft **28** is rotated by the plunger teeth to successively cause teeth **32** to engage teeth **34** and remain in cartridge projecting position, or be projected past teeth **34** and when rotated by teeth **26** to fall into the grooves **36** representing the retracted position of the cartridge. The teeth **26** are maintained in grooves **36** keeping the plunger **24** from rotating. A recess **38** is provided centrally of the shaft **28** to seat the cartridge end when the parts are assembled.

The cap **10** of the invention comprises an auxiliary cap **40**, and a base cap **41**. The auxiliary cap is required to be made of transparent material, while the base cap may be opaque to permit the material if printed thereon to be easily visible. The display material may be placed on a separate sheet, not shown, and positioned in the compartment **42** formed between the caps. The compartment need be about .004 inch in thickness. If a press fit is attempted, the printing appears distorted.

Openings **43** and **44** are formed at the top and bottom respectively of the auxiliary cap. About the lower opening **44**, a peripheral recess **46** is provided for seating a flanged ring **48**. The base cap tightly fits the auxiliary cap at the cartridge end, to seal the compartment.

At the top and bottom of the base cap, opening **49** and **51** respectively are formed. A tubular rivet **50** may be positioned between the auxiliary and base caps, and in openings **43** and **49** thereof to secure the caps permanently together, as is shown in FIG. 2. The tubular rivet constitutes an anchoring means for locking the caps securely in position. The lower edge **47** of the base cap **41** extends slightly beyond the corresponding edge **45** of the auxiliary cap **40**. I have found that this provides a supplementary seal with the ring **48**.

The base cap **41*a*** may be modified as is shown in FIG. 4, by forming a snap-bead **50*a*** about the top opening **49*a*** to fit in the opening **43** of the auxiliary cap **40**. This may be used if a removable grip type of clip is contemplated for the pen.

A permanent type of pen clip **52** having an opening **54** in a transversely extending plate **56**, may be interposed between the rivet **50** and the auxiliary cap **40**, or under the bead **50*a*** of the auxiliary cap **41*a***, to support the pen to a coat or vest pocket.

The clip **52*a*** may be modified, as is shown in FIG. 5, by forming a downwardly extending tubular neck **58** in the plate **56*a***, which can be stacked to form a rivet head, securing the auxiliary and base caps together.

The opening **60** of the rivet **50**, the opening **49*a*** in the beaded base cap **41*a***, and the opening **60*a*** of the tubular neck **58** of clip **52*a***, permit the push plunger **24** to extend therethrough for manipulation by the thumb for project or retract operation.

When the cap parts are assembled, the ring **48** which may be metal is positioned over the ends of the assembled caps, and seated in the recess **46** of the auxiliary cap to provide a cover for the lower junction of the auxiliary and base caps and to help seal the two caps. The clip is secured in the same operation that connects the eyelet. The project-retract mechanism parts are then

inserted, the spring and cartridge seated in the barrel and the unitary cap structure with the project-retract mechanism threaded thereto.

A shoulder 15 may be formed peripherally on the barrel to permit the cap to fit smoothly on the outer surface of the barrel, as is shown in FIG. 1.

The structure of auxiliary and base caps with the pen clip forms a unitary assembly with the printed or decorative material. The cartridge may be replaced without disturbing the cap parts.

If the permanent rivet structure is employed, the printed or decorative material may be sealed in the cap for the life of the pen. The caps are then more or less tamperproof.

The pen clip may be employed for sealing the parts permanently together. This is accomplished without drilling holes through the side wall of the cap, as is conventionally done.

The printed or decorative material may be viewed without obstruction even when in use. The printed and advertising material is contained in a sealed compartment free of dust and moisture.

The barrel of the pen is gradually tapered near the writing point to provide a streamlined and more comfortable shape. The tapering, however, diminishes the level area available for display purposes, a disadvantage not present if the display area is provided in the cap.

By lengthening the cap structure to a greater degree than is found in present pens, extra space may be provided for advertising display, insuring maximum display area. For example if the length of the cap is greater than the length of the barrel, more visible display area is obtained than is otherwise possible.

In addition, the diameter of the inner barrel is restricted to pass through the threaded neck portion of the outer barrel. This restriction need not be present when the display is provided in the cap. A larger diameter cap, with additional display space, may thus be obtained.

The form of the parts and their assembly lend themselves to high speed, economical production.

I have thus described my invention, but I desire it understood that it is not confined to the particular form or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and therefore I claim broadly the right to employ all equivalent instrucmentalities coming within the scope of the appended claim, and by means of which objects of my invention are obtained and new results accomplished as it is obvious that the particular embodiments herein shown and described are only some of the many

that can be employed to obtain these objects and accomplish these results.

I claim:

1. A display ball-point pen, comprising a barrel, a cartridge and a spring therein, a display cap therefor comprising a tubular base cap made of opaque material having engaging means formed on the inner wall thereof, an outer tubular transparent auxiliary cap positioned over the base cap and forming a compartment therebetween, said caps provided with top openings; a hollow fastener for pinching together the two edges of the top openings of the auxiliary and base caps to seal the compartment; a plunger mechanism for projecting and retracting the cartridge against the action of the spring, said plunger mechanism slidably extending through the hollow fastener positioned in the top opening of said caps, and having means cooperating with the cap engaging means for alternately holding the cartridge in a projected and retracted position, said auxiliary and base caps provided with bottom openings; means formed on the inner wall of the base cap; corresponding means formed on the outer wall of the barrel for engaging the means on the base cap, means for securing the edge of the bottom opening of the auxiliary cap to the edge of the bottom opening of the base member for closing the bottom of the compartment.

2. The display ball-point pen of claim 1 wherein the hollow fastener comprises a metal rivet.

3. The display ball-point pen of claim 1 wherein the hollow fastener comprises an extension of one of said caps.

4. The display ball-point pen of claim 1 wherein the hollow fastener comprises a metal extension formed on the end of a clip for the pen.

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