



G00002

25 June 2002

Title of the Invention

Writing device and Method for Removing a Writing Core Holder

Field of the Invention

This invention relates to writing devices such as marking pens and ball-point pens each with removable writing core holder.

Background of the Invention

A writing device including a barrel of case with a removable writing core, such as writing felt core, writing plastic core, or ball tip core is known in Japanese Utility Model Publication Sho 51-14262, Sho 52-2504 or Sho 52-46175. In such a writing device, the interchange of the writing core is possible and also it is capable of refilling ink after removal of the writing core from the case. However, the writing core can be damaged due to grasping it by the hand so that the reuse of the writing core is made impossible.

Japanese Utility Model Publication Sho 62-5353 discloses a writing device including a case with a holder which holds a writing core and is removable from the case. In such a writing device, the holder may enable the user to interchange the writing core without any damage of the writing core, or after removal of the writing core holder, the refill of ink is possible. However, since the writing core holder is threadedly fitted in the case, the complicated structure of the writing device results in troublesome operation which is required to remove the writing core holder from the case.

Summary of the Invention

It, therefore, is an object of the invention to provide a writing device which can overcome the above-mentioned disadvantages and is capable of removing a writing core holder from a case in aid of simple means.

In one aspect, the invention provides a writing device comprising a barrel or



166166

case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, said cap being arranged to exert an extracting force on the writing core holder for removal of the writing core holder from the barrel or case, characterized in that said cap includes a recess formed in the outer surface of said cap adjacent to its closed end to partially receive writing core tip of said holder, said recess having a projecting means formed in said recess of the cap, and the writing core holder includes an engaging means adapted to be engaged by said projecting means for exertion of the extracting force on the writing core holder.

In another aspect, the invention provides a writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, said cap being arranged to exert an extracting force on the writing core holder for removal of the writing core holder from the barrel or case, characterized in that said writing core holder includes an engaging means adapted to be engaged by a projecting means on the cap for exertion of the extracting force on the writing core holder, said projecting means comprising a pair of projecting portions formed in a recess of said cap in a spaced apart relation to define a channel between said projecting portions, in which said engaging means on said writing core holder can be fitted while positioning the writing core tip in said recess.

In yet another aspect, the invention provides a writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, characterized in that said writing core holder includes an engaging portion formed at a peripheral edge thereof and an integral abutment for abutting an end face of said case when writing core holder is in the case, but having a diameter less than that of said engaging portion such that a projecting means of the cap can be positioned adjacent said engaging portion for engagement therewith.

In still another aspect, the invention provides a writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a

forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, characterized in that said writing core holder includes an abutment for abutting an end face of said case when said holder is in the case, said abutment having an arcuate notch formed therein to define an engaging portion adapted to be engaged by a projecting means on said cap.

Brief Description of the Drawings

Figure 1 is a whole perspective view of a writing device constructed in accordance with the present invention but illustrating a cap removed from a case;

Figure 2 is a longitudinal cross section of the writing device with the cap fitted over the case;

Figure 3 is a cross section of the writing core holder, case and cap, but showing the writing core holder removed from the case using the cap;

Figure 4 is a perspective view of a second embodiment of the cap ;

Figure 5 is a cross section of the cap of the second embodiment;

Figure 6 is a perspective view of a third embodiment of the cap;

Figure 7 is a cross section of the cap of the third embodiment;

Figure 8 is a cross section of a writing device with a modified writing core holder;

Figure 9 is a cross section of a writing device with a further modified writing core holder; and

Figure 10 is a view showing the writing core holder as viewed from the right end thereof.

Preferred Embodiments of the Invention

Referring to Figs. 1 to 3 of the drawings, there is illustrated herein an embodiment of a writing device according to the present invention. The writing device comprises a barrel or case 5 containing an ink absorbing material comprising polyester fibers therein, and a writing core holder 1 fitted in the case at its tip and having writing core 4 comprising acrylic fibers held therein. The writing core holder 1 includes an engaging portion 2, preferably in the form of an annular bead formed at the outer edge of the holder and an abutment 3 formed on the outer surface of the holder 1 in a relation spaced apart from the engaging portion 2 for abutting the end face of the case 5 to prevent the writing core holder 1 from freely moving into the interior of the case 5. In this embodiment, a groove 2a is defined between the engaging portion 2 and the abutment 3.

The writing device further comprises a cap 6 adapted to be fitted over the forward portion of the case 5 for covering the writing core tip, the cap 6 including a recess 6a formed in the outer surface of the cap adjacent to its closed end to partially receive writing core tip of the holder 1 and a flange 7a formed at the peripheral edge of the closed end of the cap 6 and having an integrally projecting portion 7 positioned in the recess 6a at the edge of the cap. The projecting portion 7 has a thickness substantially identical to the width of the groove 2a so that it can be tightly fitted in the groove 2a in the writing core holder.

For refilling of ink or exchange of the entire writing core holder, the projecting portion 7 on the cap 6 is first fitted in the groove 2a defined between the engaging portion 2 and the abutment 3 on the writing core holder 4, and the cap 6 and the case 1 are then pulled away from each other

in opposite directions by the hands so that an extracting force is exerted through the engagement of projecting portion 7a on the cap 6 with the engaging portion 2 on the writing core holder 1 to extract it from the case 5. Ink can be refilled through an opening of the case 5 if necessary. In this embodiment, the writing core holder 1 remains retained on the cap 6 even after removal of the writing core holder 1 from the case since the engaging portion 7 has been tightly fitted in the groove 2a defined between the engaging portion 2 and the abutment 3. The user can place the writing core holder at any location without getting the user's hand dirty, during refilling of the ink results. Thereafter, the user grasps the cap in his hand and pushes it against the case to insert the writing core holder 1 into the case 5, thereby being ready for writing.

In this embodiment, as can be best seen in Figs. 1 and 2, a tail plug 9 is retained in the end of the case 5 with a packing 10 interposed between the plug 9 and the case. An arcuate recess 8 is formed in the tail plug 9. The tail plug 9 can be easily removed from the case 5 by inserting a portion of the flange 7a into the recess 8 and operating the flange as a lever or pulling the tail plug 9 using the flange inserted in the recess. Thus, the ink absorbing material can be removed from the case 5 for disposal thereof. Refilling of ink may be made through the opening of the case 5 at its end without removing the ink absorbing material, if necessary.

Figs. 4 to 10 show modifications of the cap and writing core holder according to the invention. A cap illustrated in Figs. 4 and 5 includes a recess 6a formed therein and a pair of projecting portions 7 formed in the recess 6a of the cap 6 in a spaced apart relation to define a channel 7b between the projection portions 7, in which the engaging portion 2 of the writing core holder 1 can be fitted while positioning the writing core tip in the recess 6a.

Figs. 6 and 7 show a cap having a projecting portion formed at the

peripheral edge thereof as a peripheral flange 7c adapted to be fitted in the groove 2a of the writing core holder 1.

Fig. 8 shows a writing core holder 1a including an engaging portion 2 formed at the peripheral edge thereof and an integral abutment 3a for abutting the end face of the case when writing core holder is in the case, but having a diameter less than that of the engaging portion 2 such that the projecting portion 7 of the cap 6 can be positioned adjacent engaging portion 2 for engagement therewith. By pulling the cap 6 and the case 5 away from each other in an opposite directions with the projecting portion 7 engaged with the engaging portion 2, the writing core holder 1a can be extracted from the case 5.

Figs. 9 and 10 show a writing core holder 1b including an abutment 3b for abutting the end face of the case when it is in the case, the abutment having an arcuate notch 11 formed therein to define an engaging portion 2a. To extract the writing core holder 1b from the case 5, the projecting portion 7 is positioned in the notch 11 to engage the engaging portion 2a and the cap 6 and the case 5 are then pulled away from each other in opposite directions.

According to the invention, any combination of the caps and the cases as shown therein is possible.

The present invention has the advantage of easily removing the writing core holder from the case of the writing device with simple means for exchange of the writing core holder or refilling of ink.

Claims

1. A writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, said cap being arranged to exert an extracting force on the writing core holder for removal of the writing core holder from the barrel or case, characterized in that said cap includes a recess formed in the outer surface of said cap adjacent to its closed end to partially receive writing core tip of said holder, said recess having a projecting means formed in said recess of the cap, and the writing core holder includes an engaging means adapted to be engaged by said projecting means for exertion of the extracting force on the writing core holder.
2. A writing device according to claim 1 wherein said writing core holder further includes an abutment formed on the outer surface of the holder in a relation spaced apart from said engaging means for abutting an end face of said case to prevent said writing core holder from freely moving into the interior of the case, and a groove defined between said engaging means and said abutment for receiving said projecting means of said cap.
3. A writing device according to claim 2 wherein said projecting means has a thickness substantially identical to the width of said groove so that it can be tightly fitted in said groove in the writing core holder.
4. A writing device according to claim 1, 2 or 3 wherein said projecting means comprises a flange formed at a peripheral edge of the cap and adapted to be fitted said groove.
5. A writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, said cap being arranged to exert an extracting force on the writing core holder for removal of the writing core holder from the barrel or case, characterized in that said writing core holder includes an engaging means adapted to be engaged by a projecting means on the cap for exertion of the extracting force on the writing core holder, said projecting means comprising a pair of projecting portions formed in a recess of

said cap in a spaced apart relation to define a channel between said projecting portions, in which said engaging means on said writing core holder can be fitted while positioning the writing core tip in said recess.

6. A writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, characterized in that said writing core holder includes an engaging portion formed at a peripheral edge thereof and an integral abutment for abutting an end face of said case when writing core holder is in the case, but having a diameter less than that of said engaging portion such that a projecting means of the cap can be positioned adjacent said engaging portion for engagement therewith.

7. A writing device comprising a barrel or case, a holder having a writing core held therein and fitted in the case at a forward end thereof, and a cap adapted to be fitted over said case for covering the writing core tip, characterized in that said writing core holder includes an abutment for abutting an end face of said case when said holder is in the case, said abutment having an arcuate notch formed therein to define an engaging portion adapted to be engaged by a projecting means on said cap.