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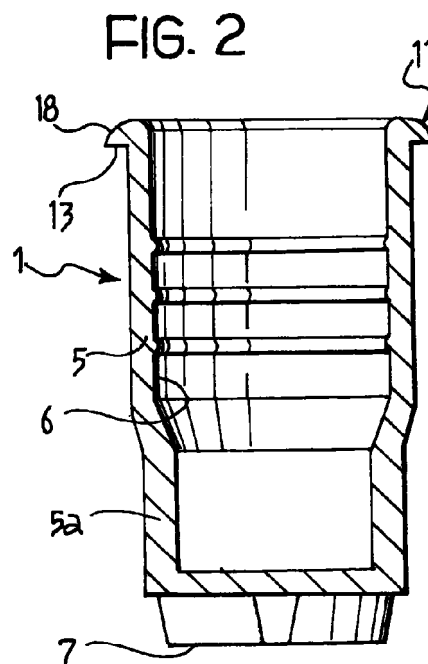
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(54) **A plug for closing the top end of the shaft of a felt pen or similar writing instrument**

(57) A plug for closing the top end of the shaft (3) of a felt pen or similar writing instrument has a cylindrical body (5) which can be fitted in the top end in a leaktight manner. The plug comprises a first end (7) for abutting a corresponding end of an ink reservoir (9) of the writing instrument, and a second end having a collar (11) projecting radially outwardly from the cylindrical body (5) and defining a radial abutment surface (13) for the fitting of the plug (1) in the shaft (3). The plug (1) is shaped in a manner such as to resist gripping thereof by the teeth of a user, particularly of a child.



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Description

[0001] The present invention relates to a plug for closing the top end of the shaft of a felt pen or similar writing instrument, the plug having a cylindrical body which can be fitted in the top end in a leaktight manner and comprising a first end for abutting a corresponding end of an ink reservoir of the writing instrument and a second end having a collar projecting radially outwardly from the cylindrical body so as to define a radial abutment surface for the fitting of the plug in the shaft.

[0002] A plug of the known type defined above is shown in appended Figure 1, which is a side elevational view thereof.

[0003] The plug, generally indicated 1, comprises a cylindrical body 5 to be fitted in the end of the shaft 3 of the writing instrument P remote from the end having the writing tip (not shown). A smaller-diameter portion 5a normally extends from a first end of the body 5 and terminates in a transverse surface 7 for abutting a corresponding axial end of an ink reservoir 9 of the instrument P constituted, for example, by a cylindrical pad. The body 5 generally has a substantially cylindrical axial cavity 6 closed at the end having the transverse surface 7.

[0004] At the end remote from the transverse surface 7 a collar 11 projects radially outwardly from the body 5 so as to define an annular and radial abutment surface 13 which constitutes a travel limit shoulder for the fitting of the plug 5 in the shaft 3. In particular, the collar 11 is defined radially by a circular surface 15 which extends axially and has an end chamfer 16.

[0005] Since the collars 11 of known plugs extend at least 2 or 3 mm beyond the remaining portion of the body 5, when the plug 1 is fitted in the shaft 3, that is, when the abutment surface 13 is in abutment with the corresponding end of the shaft 3, the collar 11 projects to an extent such that it can be gripped by the user's teeth, enabling the body 5 to be removed from the shaft 3. The more the collar 11 projects from the shaft 3, the easier it is to remove the plug 1 from the shaft 3. Moreover, the presence of the cylindrical surface 15 facilitates gripping of the collar with the teeth.

[0006] As a result of the removal of the plug 1, the reservoir 9 is free to come out of the shaft 3 with the risk of at least some of the ink contained therein being dispersed into the environment.

[0007] To overcome this problem, the subject of the invention is a closure plug of the type indicated above, characterized in that the plug is shaped in a manner such as to resist gripping thereof by the teeth of a user, particularly of a child.

[0008] By virtue of this concept, the plug according to the invention is difficult to remove from the shaft of the writing instrument, thus discouraging attempts by the user, particularly by a child, to remove it, and preventing the risks connected with the removal of the plug.

[0009] Further characteristics and advantages of

the invention will become clearer from the following detailed description, provided purely by way of non-limiting example with reference to the appended drawings, in which:

Figure 1 is a sectioned side elevational view of a plug for closing the top end of the shaft of a felt pen or similar writing instrument according to the prior art,

Figures 2 and 3 are a sectioned side elevational view and a side elevational view of a closure plug according to the invention, respectively, and

Figures 4 and 5 are views similar to Figures 2 and 3, respectively, of another plug according to the invention.

[0010] With reference to Figures 2 to 5, in which the same reference numerals have been used to indicated parts identical or similar to those of the plug of Figure 1, a plug 1 for closing the top end of the shaft of a felt pen or similar writing instrument has a collar 11 of reduced axial length in comparison with that of similar known plugs. In particular, the collar 11 extends from the remaining portion of the body 5 for a distance substantially less than 1 mm so as to prevent it from being gripped by a user's teeth.

[0011] The collar 11 is advantageously defined axially, at the end remote from the transverse surface 7, by a substantially semi-toroidal surface 18 so that the radially outer portion of the collar 11 has a receding shape which, in the event of an attempt to grip it by means of the teeth, favours sliding of the teeth thereon. By virtue of the surface 18, the radially inner portion of the collar 11 has a shape which is convex or chamfered towards the cavity 6 so as to constitute a lead-in for the introduction into the cavity of a tool of a shape corresponding to that of the cavity in order to insert the plug 1 in the shaft 3 by means of an automatic device during the manufacture of the writing instrument.

[0012] The surface 18 of the collar 11 is advantageously inclined at an acute angle to the perpendicular to the abutment surface 13 in the region of the corner between the surface and the abutment surface 13, so as to form a sharp edge in order to accentuate the receding shape of the collar 11 and further to favour the slipping of a user's teeth in the event of an attempt to grip the collar 11.

[0013] Whereas the plug 1 shown in Figures 2 and 3 is normally used in writing instruments of fairly large diameter, the plug 1 of Figures 4 and 5 is usually used in writing instruments, the stems of which are thinner and more slender, since its smaller-diameter portion 5a is longer than the portion 5a of the plug 1 shown in Figures 2 and 3.

Claims

1. A plug for closing the top end of the shaft (3) of a felt pen or similar writing instrument, the plug having a cylindrical body (5) which can be fitted in the top end in a leaktight manner and comprising a first end (7) for abutting a corresponding end of an ink reservoir (9) of the writing instrument, and a second end having a collar (11) projecting radially outwardly from the cylindrical body (5) so as to define a radial abutment surface (13) for the fitting of the plug (1) in the shaft (3),
characterized in that the plug is shaped in a manner such as to resist gripping thereof by the teeth of a user, particularly of a child.

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2. A plug according to Claim 1, characterized in that it has a cylindrical axial cavity (6), and in that its second end is defined axially by a substantially semi-toroidal surface (18).

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3. A plug according to Claim 2, characterized in that the collar (11) terminates in an acute-angled edge, in the region of the abutment surface (13).

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4. A plug according to any one of Claims 1 to 3, characterized in that the collar (11) extends axially from the remaining portion of the body (5) by a distance substantially less than 1 mm.

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FIG. 1 (PRIOR ART)

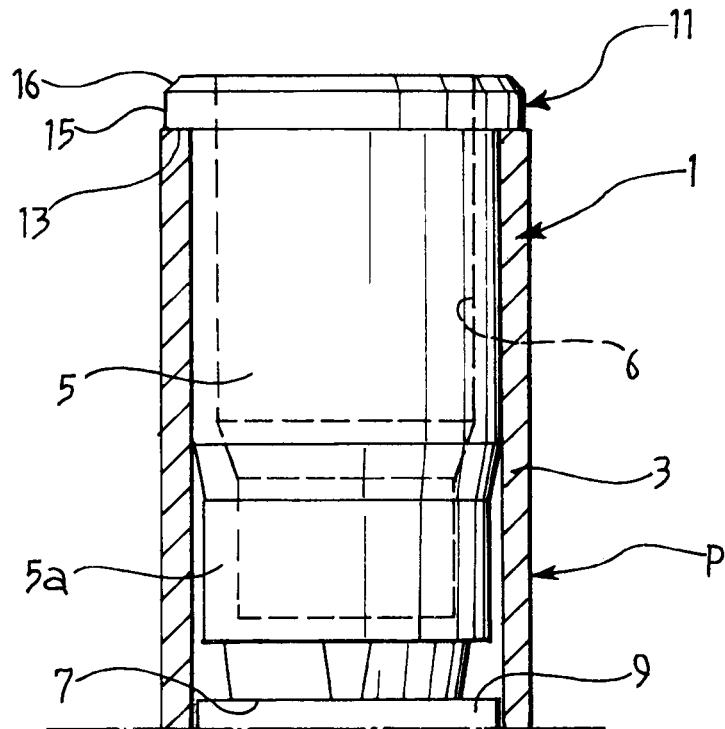


FIG. 2

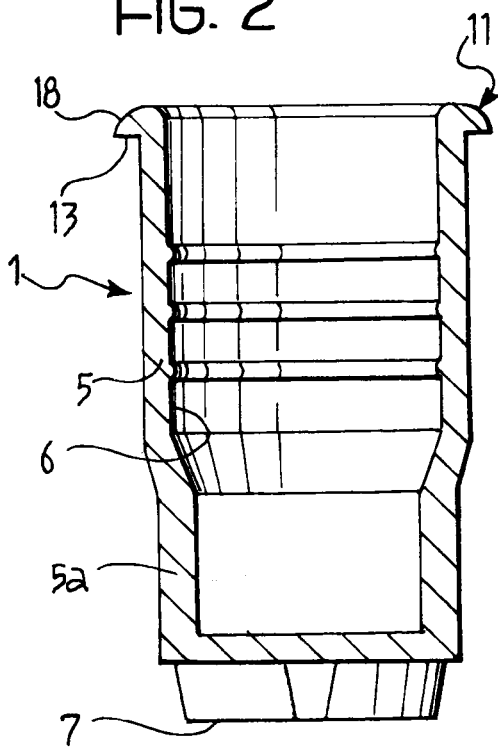
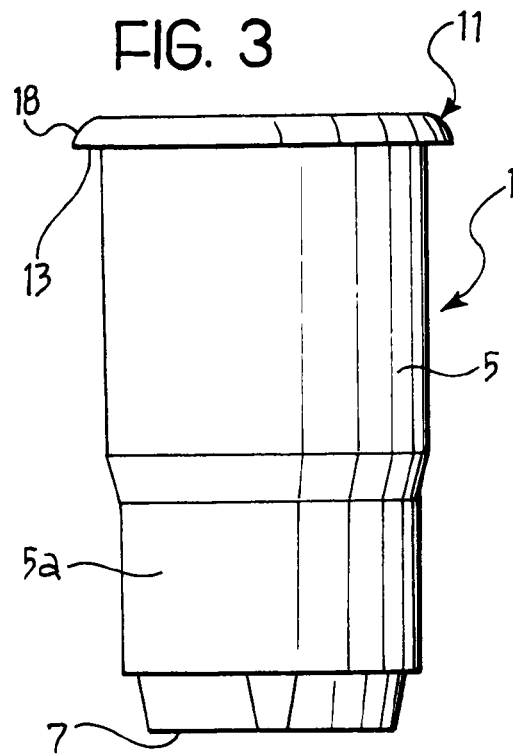
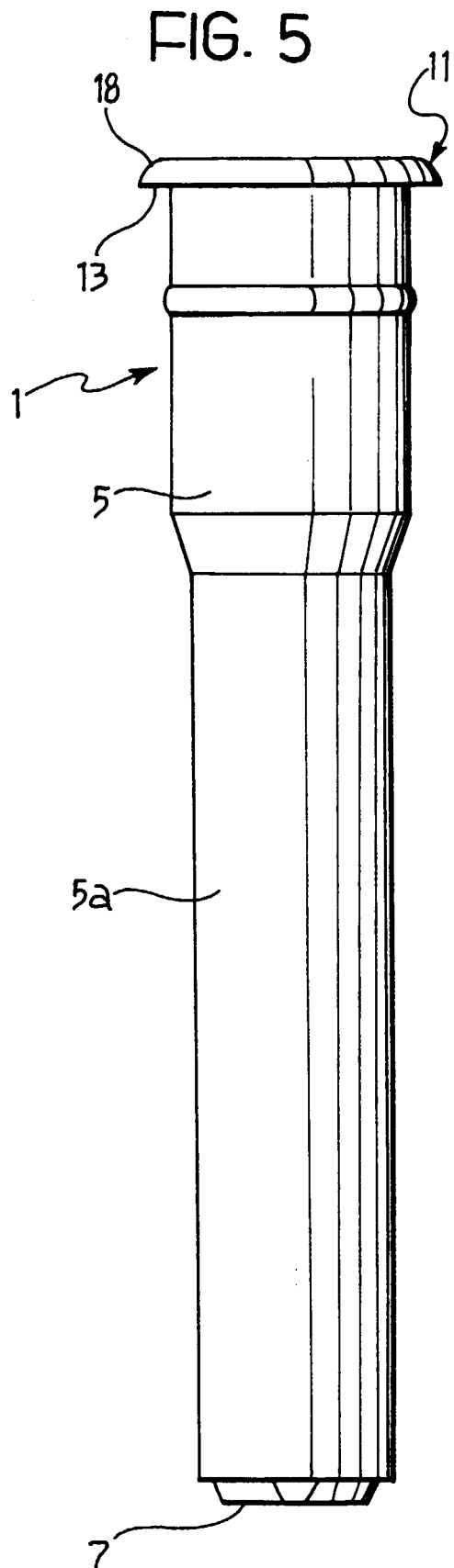
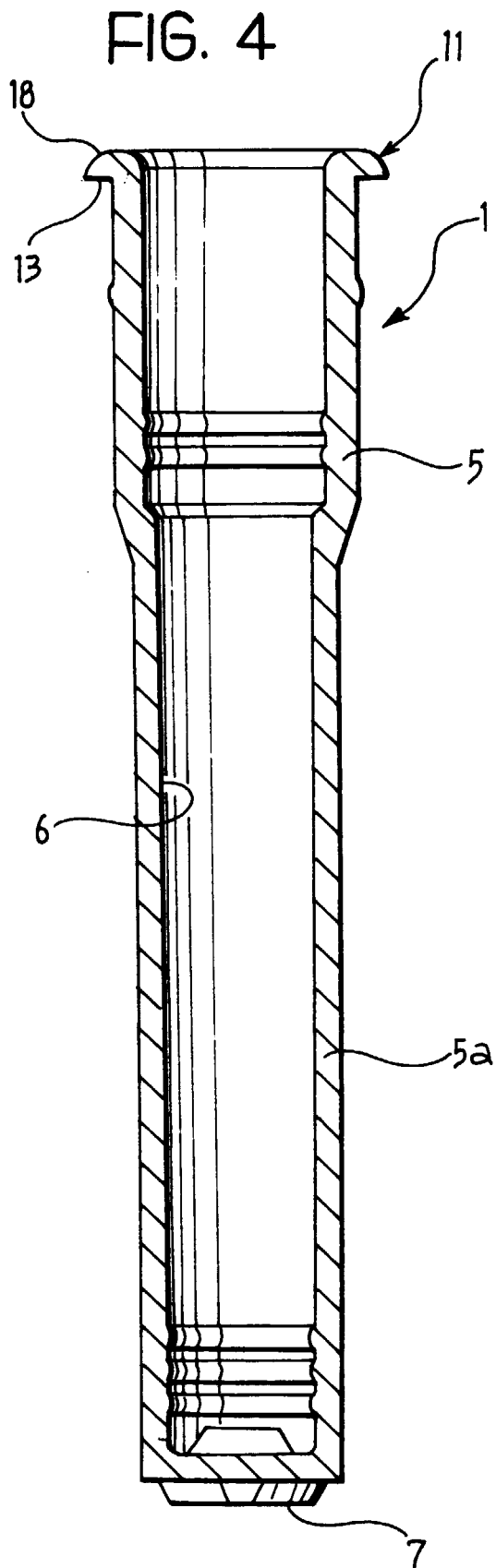


FIG. 3







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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 6702

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 9 August 2000	Examiner Hinrichs, W
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 00 10 6702

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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