(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 452 281 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **91830136.7**

(51) Int. Cl.[5] : **B43K 7/12**

(22) Date of filing : **09.04.91**

(30) Priority : **13.04.90 IT 5297090 U**

(43) Date of publication of application :
16.10.91 Bulletin 91/42

(84) Designated Contracting States :
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

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(54) A ballpoint pen with a retractable writing tip.

(57) The pen includes a hollow, substantially cylindrical barrel (4), a cap (6) mounted coaxially on the end of the barrel (4) opposite that associated with the writing tip (2) and slidable thereon, resilient means (8) interposed between the barrel (4) and the cap (6) and a snap-mechanism (25) located in the barrel (4) for causing the writing tip (2) to project from the barrel (4) or to be retracted therein as a result of the sliding of the cap (6) relative to the barrel (4).

The cap (6) comprises a sleeve (10) and a top portion (12) having a head (14) with a projecting central pin (16) which fits in the sleeve (10), the sleeve (10) and the pin (16) being fixed together by engagement means (18, 20), the free end (22) of the pin (16) having an annular projection (24) which is intended to abut a corresponding surface (21) of the barrel (4) so as to hold the free end (22) in the barrel (4) and acting as an actuator for the snap-mechanism (25).

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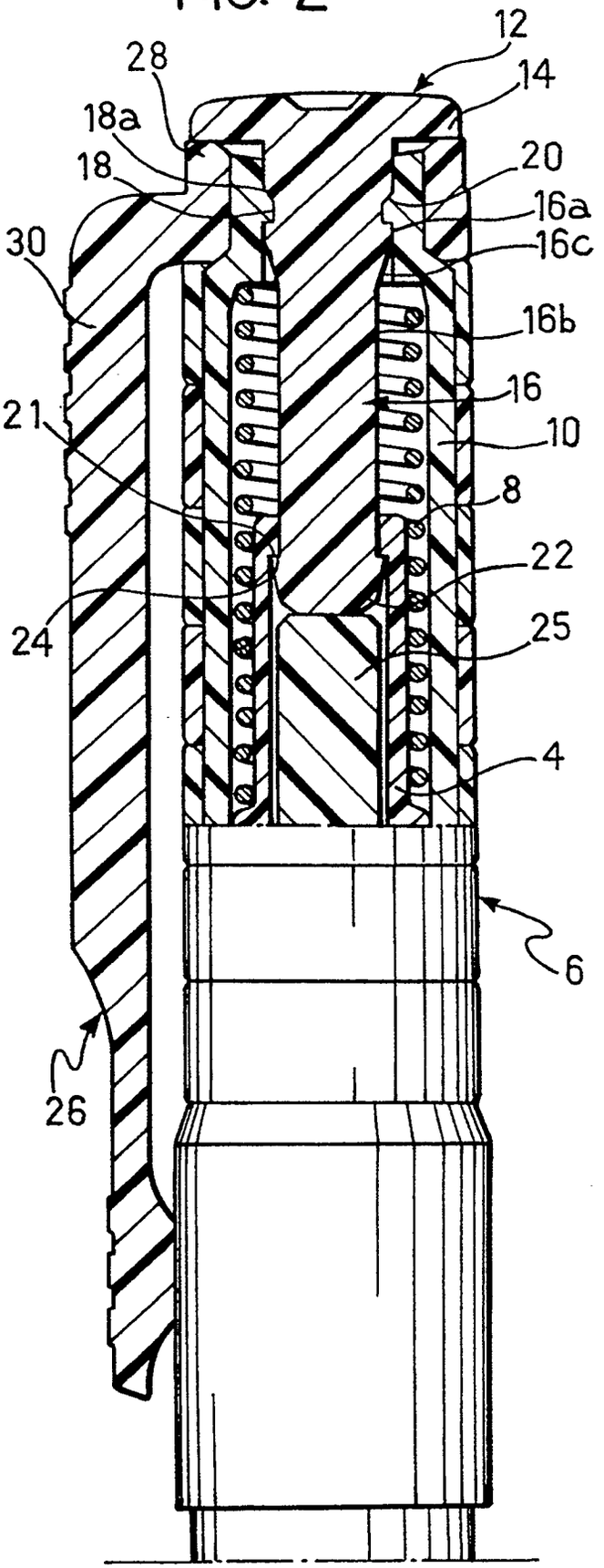
FIG. 2



The present invention relates to a ballpoint pen with a retractable writing tip, including:

a hollow, substantially cylindrical barrel,

a cap mounted coaxially on the end of the barrel opposite that associated with the writing tip and slidable relative thereto,

resilient means interposed between the barrel and the cap, and

a snap-mechanism located in the barrel for causing the writing tip to project from the barrel or be retracted therein as a result of the sliding of the cap relative to the barrel.

The object of the present invention is to provide a ballpoint pen of the type indicated above whose components can be assembled quickly by automated systems and hence at low cost.

The subject of the present invention is a ballpoint pen of the type indicated above, characterised in that the cap comprises a sleeve and a top portion having a head with a projecting central pin which fits in the sleeve, the sleeve and the pin being fixed together by engagement means, the free end of the pin having an annular projection which is intended to abut a corresponding surface of the barrel so as to restrain the free end in the barrel and acting as an actuator for the snap-mechanism.

The pen according to the present invention has the advantage that it is constituted by a small number of parts which can be assembled quickly. In particular, the top portion which forms part of the cap can be fitted onto the other components of the pen simply by its insertion in the sleeve of the cap and in the barrel under pressure, as will be described in greater detail below. This operation can thus easily be automated.

In a preferred embodiment of the present invention, the ballpoint pen includes a clip constituted by an annular element from which a longitudinal element extends outside the sleeve of the cap and the barrel and is characterised in that the annular element is clamped between the head of the top portion and the facing end of the sleeve.

There is thus the further advantage that no further auxiliary elements are needed to fit the clip to the barrel of the pen and this can also be carried out by automated systems.

Further advantages and characteristics of the present invention will become clear from the detailed description which follows with reference to the appended drawing, provided by way of non-limiting example, in which:

Figure 1 is an elevational view of a ballpoint pen according to the invention, and

Figure 2 is a section taken on the line II-II of Figure 1, on an enlarged scale.

With reference to the drawings, a ballpoint pen with a retractable writing tip 2 includes a hollow, substantially cylindrical barrel 4 and a cap 6 mounted coaxially on the end of the barrel 4 opposite that associated with the writing tip 2 and slidable relative thereto. A helical spring 8 is interposed between the barrel 4 and the cap 6.

The cap 6 is constituted by a sleeve 10 and a top portion 12 having a head 14 with a projecting central pin 16 which fits in the sleeve 10. The pin 16 has a first portion 16a of larger cross-section, in which an annular groove 20 is formed, and a second portion 16b of smaller cross-section which is joined to the first portion 16a by a flared intermediate portion 16c.

The sleeve 10 and the top portion 12 are fixed together by engagement means comprising the groove 20 in the pin 16 and an annular projection 18 of corresponding shape to the shape of the groove 20 on the inner surface of the sleeve 10. The side 18a of the projection 18 which faces the head 14 of the top portion 12 is inclined to the axis of the pen at an angle substantially similar to that of the intermediate portion 16c of the pin 16 so as to facilitate the fitting of the top portion 12 in the sleeve 10, as will be described in greater detail below.

The free end 22 of the pin 16 is tapered and has an annular projection 24 which is intended to abut a corresponding surface 21 of the barrel 4 so as to restrain the free end 22 in the barrel 4. The free end 22 also acts as the actuator of the snap-mechanism of the pen, schematically indicated 25, which is of known type and is not described further.

The pen also includes a clip 26 constituted by an annular element 28 from which a longitudinal element 30 extends outside the sleeve 10 of the cap 6 and the barrel 4. The annular element 28 is clamped between the head 14 of the top portion 12 and the facing end of the sleeve 10.

In order to assemble the components of the ballpoint pen, it suffices to insert the pin 16 of the top portion 12 in the annular element 28 of the clip 26, the sleeve 10 and the barrel 4 which are arranged coaxially, making use of the peripheral resilient deformability of the barrel 4 and the sleeve 10. The free end 22 of the pin 16 actually enters the barrel 4 easily by virtue of its taper and is clamped therein by the projection 24 which abuts the stop surface 21. The engagement of the projection 18 of the sleeve 10 in the groove 20 in the pin 16 of the top portion 12, however, interconnects these two elements, clamping the annular element 28 of the clip 26 between them. The insertion of the pin 16 in the sleeve 10 is facilitated by the flared side of the portion 16c of the pin 16 which can thus slide against the side 18a of the projection 18 which has a substantially similar inclination.

In order to operate the snap-mechanism 25, it suffices to press the head 14 of the top portion 12 which is lowered with the clip 26 and the sleeve 10, thus actuating the mechanism 25 by means of the free end 22 of the pin 16. The spring 8 returns the cap 6 to its original position as soon as the pressure is released from the head 14 of the top portion 12.

Claims

1. A ballpoint pen with a retractable writing tip (2), including:

   a hollow, substantially cylindrical barrel (4),

   a cap (6) mounted coaxially on the end of the barrel (4) opposite that associated with the writing tip (2) and slidable relative thereto,

   resilient means (8) interposed between the barrel (4) and the cap (6), and

   a snap-mechanism (25) located in the barrel (4) for causing the writing tip (2) to project from the barrel (4) or be retracted therein as a result of the sliding of the cap (6) relative to the barrel (4),

   the ballpoint pen being characterised in that the cap (6) comprises a sleeve (10) and a top portion (12) having a head (14) with a projecting central pin (16) which fits in the sleeve (10), the sleeve (10) and the pin (16) being fixed together by engagement means (18, 20), the free end (22) of the pin (16) having an annular projection (24) which is intended to abut a corresponding surface (21) of the barrel (4) so as to restrain the free end (22) in the barrel (4) and acting as an actuator for the snap-mechanism (25).

2. A ballpoint pen according to Claim 1, including a clip (26) constituted by an annular element (28) from which a longitudinal element (30) extends outside the sleeve (10) of the cap (6) and the barrel (4), characterised in that the annular element (28) is clamped between the head (14) of the top portion (12) and the facing end of the sleeve (10).

3. A ballpoint pen according to any one of the preceding claims, characterised in that the means for engaging the top portion (12) in the sleeve (10) comprise an annular groove (20) in the surface of the pin (16) and an annular projection (18) of corresponding shape to the shape of the groove (20) in the internal surface of the sleeve (10).

4. A ballpoint pen according to Claim 3, characterised in that the pin (16) has a first portion (16) of larger cross-section, in which the groove (20) is formed, and a second portion (16b) of smaller cross-section which is joined to the first portion (16a) by a flared intermediate portion (16c), and in that the side (18a) of the projection (18) of the sleeve (10) facing the head (14) of the top portion (10) is inclined in substantially the same manner as the intermediate portion (16c) of the pin (16).

5. A ballpoint pen according to any one of the preceding claims, characterised in that the free end of the pin (16) is tapered to facilitate its insertion in the barrel (4).

FIG. 2

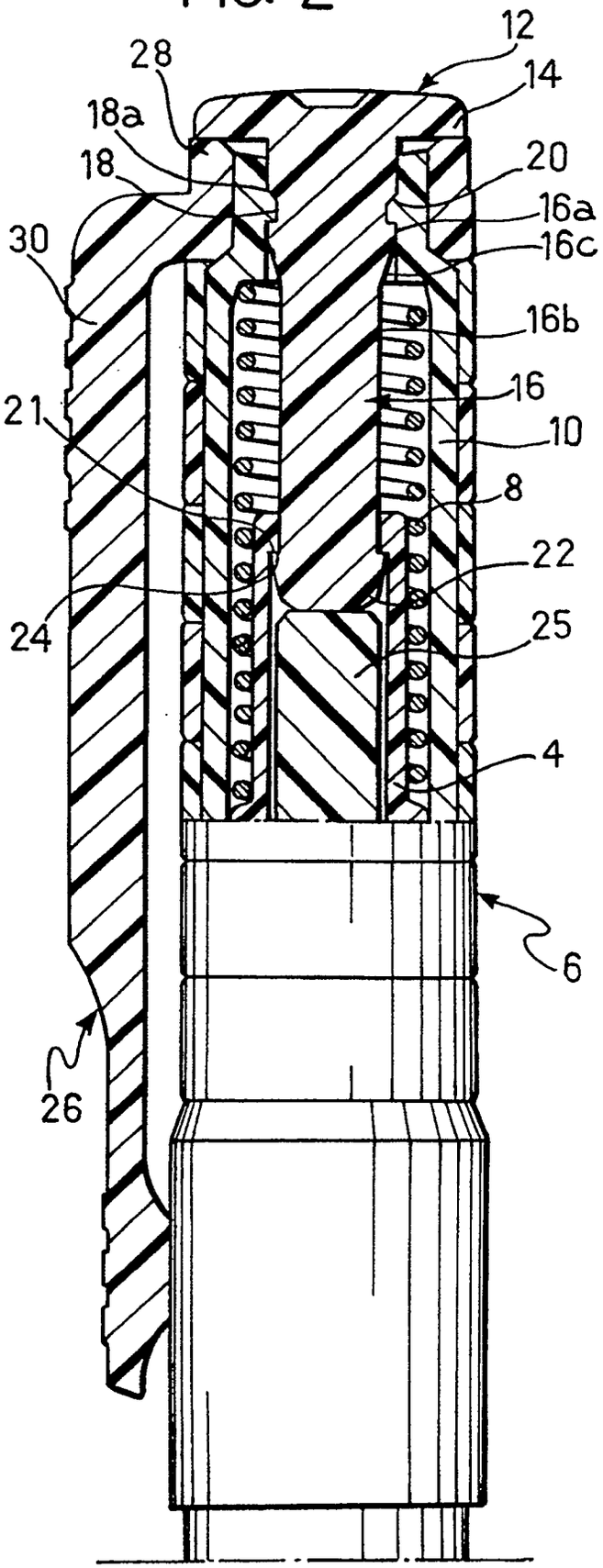

12
28
14
18a
18
20
16a
16c
30
16b
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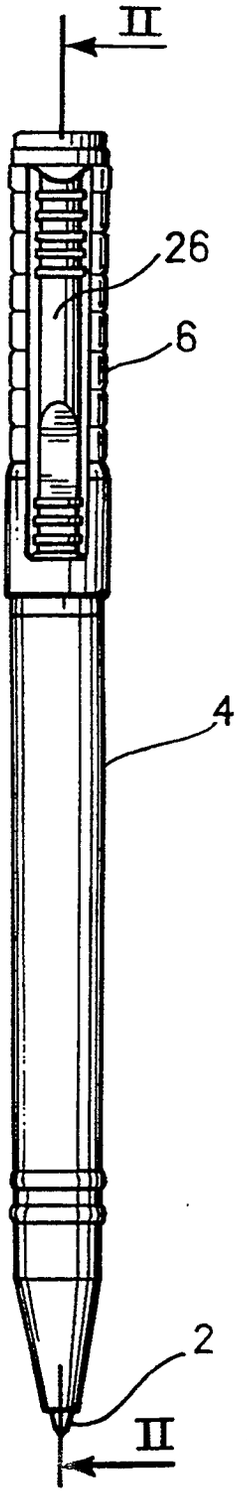
FIG. 1


II
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II

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EUROPEAN SEARCH REPORT

Application Number

EP 91 83 0136

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	GB-A-1 264 963 (SCRIPTO PENS) * page 2, line 1 - line 35; figure *	1,3	B43K7/12
Y		2	
A		4,5	

Y	US-A-3 326 189 (BAER) * column 2, line 56 - line 63; figures 3,6 *	2	

A	FR-A-934 235 (FLOQUET) * page 1, line 29 - line 46; figure 1 *	1,2	

A	FR-A-1 133 917 (DEVOUCOUX) * page 1, right column, paragraph 8 -paragraph 10; figures 2,4,5 *	2	

			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B43K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15 JULY 1991	PERNEY Y.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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