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(54) **Ball point pen**

(57) Ball point pen (1) provided with an axially hollow body (2), and with an ink reservoir (3) which is inside the body (2) itself: the body (2) being created via injection moulding, and presenting a point portion (6) which is

provided with an external hand grip (7) for the ball point pen (1) itself, the body (2) being produced by means of injection moulding, and which is axially crossed by an inner axial cavity (9) which is defined by the containing reservoir (3).

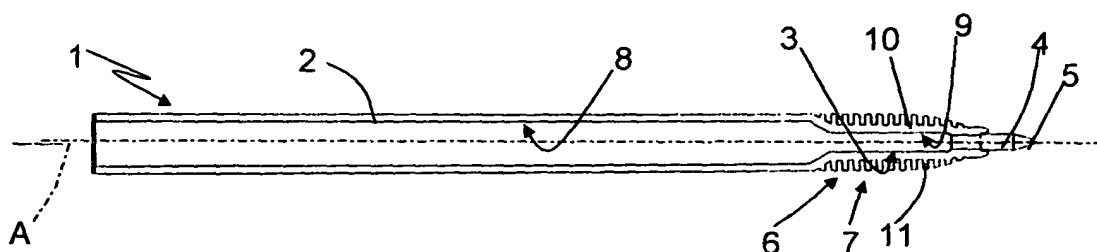


Fig. 2

Description

[0001] The present invention refers to a ball point pen.

[0002] In particular, the present invention refers to a ball point pen of a cost-effective kind, to which the following description will make specific reference without, however, losing any of its general nature due to this fact.

[0003] In the field of cost-effective ball point pens, ball point pens of a well-known kind comprise an axially hollow body, a reservoir for containing ink inside the axially hollow body, and a point which is inserted into the body and connected to the reservoir in order to supply ink to a sphere which is contained in the point itself.

[0004] Ball point pens of the kind which have just been described above are produced either by means of the extrusion or the moulding of the axially hollow body, but in the first case a turning operation is necessary in order to create a tapering zone where the point is inserted, and in the second case a refill is necessary, which defines the containing reservoir, and which presents an internal dimension of such dimensions as to avoid any ink leakage due to the force of gravity.

[0005] In both of the case which have just been described above, the need for extra mechanical working in order to give each ball point pen its final shape, as well as the need to foresee several components which have to be assembled in relation to each other, render the respective ball point pens less cost-effective than they should be in reality.

[0006] The aim of the present invention is to produce a cost-effective ball point pen in economic and simple fashion, and the cost of which will be decidedly lower than that of other cost-effective ball point pens which are currently available on the market.

[0007] According to the present invention, a ball point pen will be produced comprising an axially hollow body and an ink reservoir which is inside the axially hollow body; the ball point pen being characterised by the fact that the axially hollow body is produced by injection moulding, and it presents a point portion which is provided with an external handgrip for the ball point pen itself, and presenting an inner axial cavity which defines the said containing reservoir.

[0008] The present invention will now be described with reference to the attached drawings, which illustrate a non-limiting form of embodiment of the present invention, and in which:

- FIGURE 1 shows an elevated lateral view of a preferred form of embodiment of a ball point pen according to the present invention;
- FIGURE 2 shows a section along the line II-II which is shown in FIGURE 1;
- FIGURE 3 shows an elevated lateral view of a second preferred form of embodiment of the ball point pen which is shown in FIGURE 1;
- FIGURE 4 shows an elevated lateral view of a third preferred form of embodiment of the ball point pen

which is shown in FIGURE 1; and

- FIGURE 5 shows a section along the line V-V which is shown in FIGURE 4.

5 **[0009]** With reference to FIGURES 1 and 2, the number 1 refers to a ball point pen in its entirety.

10 **[0010]** The pen 1 comprises an axially hollow body 2 which extends a longitudinal axis A, an ink reservoir 3 which is inside the body 2, and a point 4 which is inserted inside the body 2 and which is connected with the reservoir 3 in order to supply with ink a sphere 5 which is contained in the point 4 itself.

15 **[0011]** The body 2 is made of thermo-plastic material or of thermo-plastic rubber in a single injection moulding operation, and comprises a point portion 6 which is provided with an external handgrip 7 for the pen 1, and a longitudinal cavity 8, which extends along the whole of the axis A and which presents a narrow section along the portion 6 itself.

20 **[0012]** In particular, the point portion 6 ends in correspondence with the point 4, and presents an inner axial cavity 9, which is obtained during the moulding of the body 2, which defines the terminal part of the cavity 8, and is closed by the point 4 itself. The cavity 9 presents an inner diameter which has a lower value than an inner diameter of the cavity 8, and a maximum value which is substantially equal to 2.5 mm, or, however, of a value such as to prevent any accidental leakage of the ink.

25 **[0013]** Furthermore, the cavity 9 and the handgrip 7 present a same axial length L1 in that, taking into consideration the smaller diameter of the cavity 9 in relation to the cavity 8, it is necessary to strengthen the body 2 by means of the handgrip 7 also outside in order to make writing easier. In the form of embodiment which is shown in FIGURE 2, the length L1 is of dimensions which are strictly inferior to an axial length L of the body 2, or rather inferior to a third or a quarter of the length L, or according to a form of embodiment which is not illustrated, the length L1 can even be equal to the length L.

30 **[0014]** The handgrip 7 comprises a base tubular wall 10 which has a radial thickness which is substantially constant and which defines the cavity 9 inside its own interior, and which has a number of stiffening fins 11, which are arranged transverse to the axis A, and which present a decreasing radial height towards the point 4. In particular, each fin 11 is defined by a respective annular disc which is integral with the wall 10 in a direction which is transverse to the axis A and which is placed side by side with the annular discs of the other fins 11.

35 **[0015]** The form of embodiment which is illustrated in FIGURE 3 refers to a pen 1' which is similar to the pen 1 from which the pen 1' differs due to the fact that the stiffening fins, which are indicated in this case with the

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55 **[0015]** The form of embodiment which is illustrated in FIGURE 3 refers to a pen 1' which is similar to the pen 1 from which the pen 1' differs due to the fact that the stiffening fins, which are indicated in this case with the

number 11', are arranged parallel to the axis A, presenting, however, a decreasing radial height towards the point 4.

[0016] The form of embodiment which is illustrated in FIGURES 4 and 5 refers to a pen 1" which is similar to the pen 1, from which the pen 1" differs in the first place due to the fact that the stiffening fins, which are indicated in this case with the number 11", are arranged parallel to the axis A, and, in the second place, due to the fact that the inner axial cavity 9 is defined by a hollow tubular body 9", which extends in staggered fashion inside the longitudinal cavity 8, and which is produced by injection moulding together with the said axially hollow body 2.

[0017] In particular, the body 9" is radially separated from the body 2 by an axial lap of a determined length, and is of a single piece with the body 2 itself for the course of an axial lap which corresponds to the fins 11".

[0018] Furthermore, in the pen 1", the handgrip 7, as well as comprising the fins 11", also comprises an externally rough portion 7", which is axially aligned with the fins 11" themselves, and which radially overlaps the body 9".

[0019] The externally rough portion 7" is produced directly on the body 2, and presents an external diameter, and an internal diameter, which are substantially equal to the external and internal diameters of the body 2 itself.

[0020] In the pen 1", the presence of the body 9" renders superfluous the presence of the fins 11" for the total length of the inner axial cavity 9, in that the body 9" itself presents the same dimensions as the tubular wall 10 and is radially separated from the body 2 at least along the lap which is concerned with the externally rough portion 7".

[0021] It is intended that the present invention should not be limited to the forms of embodiment herein described and illustrated, which are to be considered as examples of forms of embodiment of the ball point pen, and which may instead be subject to further modifications relating to the shape and disposition of the parts, as well as to details pertaining to construction and assembly.

Claims

1. Ball point pen (1)(1')(1'') comprising an axially hollow body (2) and an ink reservoir (3) which is inside the axially hollow body (2); the ball point pen (1)(1')(1'') being **characterised by** the fact that the axially hollow body (2) is produced by injection moulding, and it presents a point portion (6) which is provided with an external handgrip (7) for the ball point pen (1)(1')(1'') itself, and presenting an inner axial cavity (9) which defines the said containing reservoir (3).
2. Ball point pen according to Claim 1, **characterised by** the fact that the axially hollow body (2) presents a longitudinal axis (A) and a longitudinal cavity (8),

which extends along the entire longitudinal axis (A), and which presents a narrow section along the said inner axial cavity (9).

3. Ball point pen according to Claim 2, **characterised by** the fact that the said external handgrip (7) comprises a number of stiffening fins (11)(11')(11'') which are of a decreasing radial height.
4. Ball point pen according to Claim 3, **characterised by** the fact that the said stiffening fins (11) are arranged transverse to the said longitudinal axis (A).
5. Ball point pen according to Claim 4, **characterised by** the fact that the said stiffening fins (11') are arranged parallel to the said longitudinal axis (A).
6. Ball point pen according to Claims 4 or 5 **characterised by** the fact that the said point portion (6) presents an axial length (L1) of dimensions which are strictly inferior to an axial length (L) of the said axially hollow body (2), or rather of dimensions which are substantially equal to an axial length (L1) of the said axially hollow body (2).
7. Ball point pen according to Claim 3, **characterised by** the fact that the said handgrip (7) comprises an externally rough portion (7'') which is axially aligned with the said stiffening fins (11'').
8. Ball point pen according to Claim 3, **characterised by** the fact that the said inner axial cavity (9) is defined by a hollow tubular body (9''), which extends inside the longitudinal cavity (8), and which is produced by injection moulding together with the said axially hollow body (2).
9. Ball point pen according to Claim 8, **characterised by** the fact that the said stiffening fins (11'') are arranged parallel to the said longitudinal axis (A), and they partially overlap the said hollow tubular body (9'').
10. Ball point pen according to any of the preceding Claims whatsoever, **characterised by** the fact of comprising a point (4) which is inserted into the point portion (6) and connected with the reservoir (3) in order to supply ink to a sphere (5) which is container in the point (4) itself.

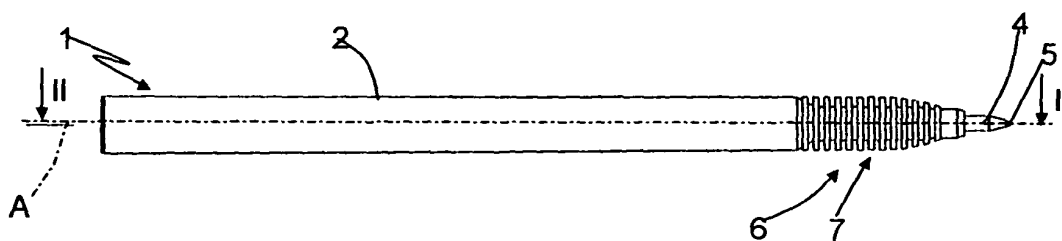


Fig. 1

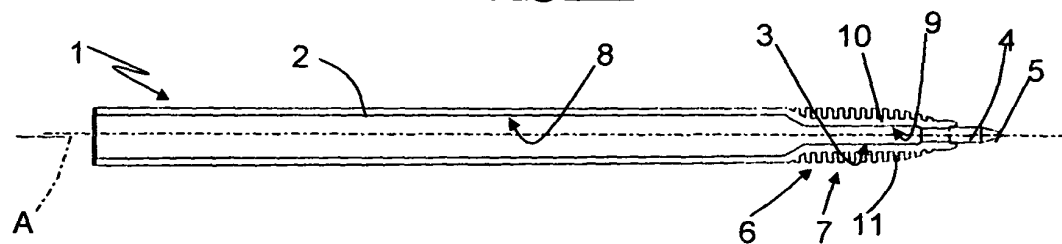


Fig. 2

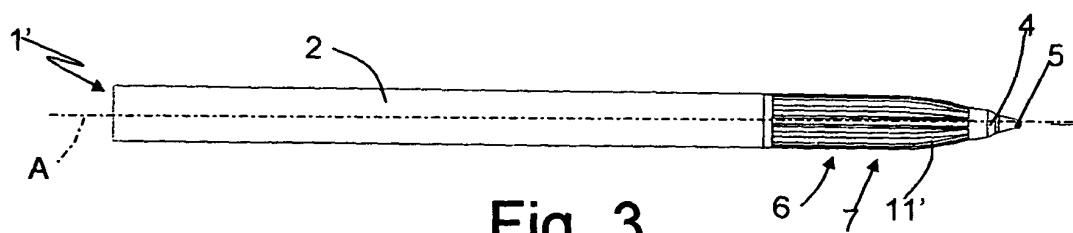


Fig. 3

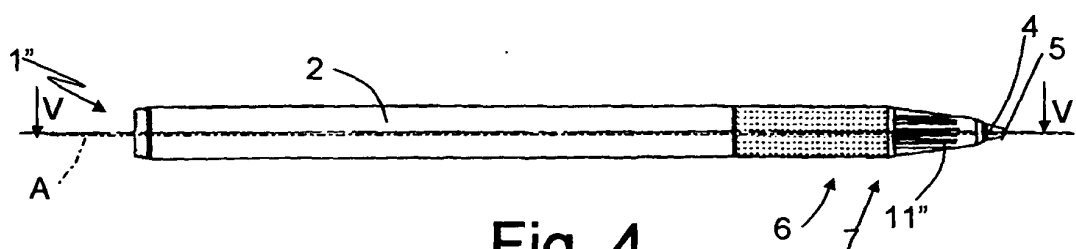


Fig. 4

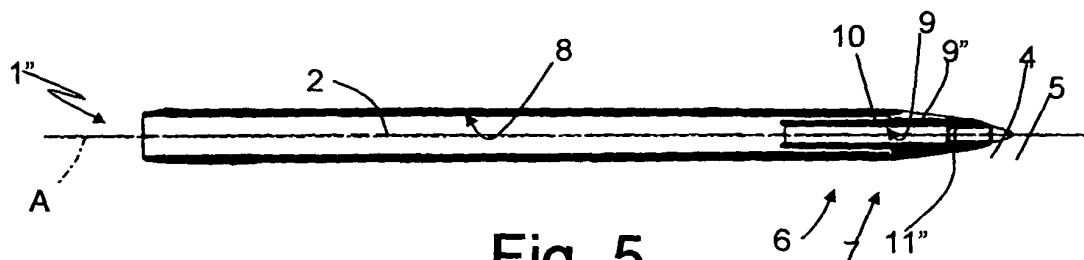


Fig. 5