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(11)

EP 1 177 917 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
06.02.2002 Bulletin 2002/06

(51) Int Cl.7: **B43K 23/008, B43K 5/00**

(21) Application number: **01117791.2**

(22) Date of filing: **02.08.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **02.08.2000 IT PD000056 U**

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(54) **Pen with plastic body having improved grip**

(57) A pen (11) with a plastic body (10) whose outer surface, at least in the hand grip regions, has a finish (17a, 17b, 17c) provided at least partially by photoengraving.

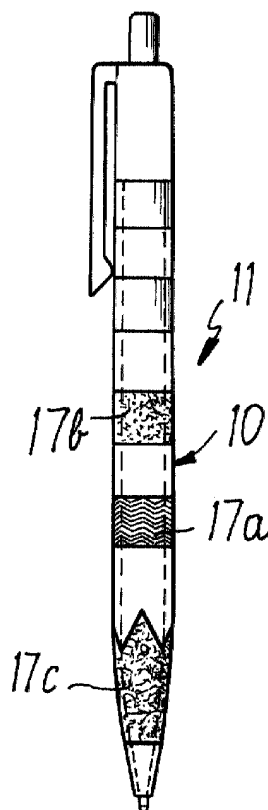


Fig. 5

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Description

[0001] The present invention relates to a pen with a plastic body having improved grip.

[0002] It is known that pens that have a plastic body mostly have a smooth-finish level surface; this often causes problems in terms of comfort in use because grip becomes difficult owing to the low friction that can occur between the fingers and the surface.

[0003] In some cases, the surface is finished by using the electrical discharge machining technique which increases the roughness of the surface but has practical limitations, because in order to provide a surface having raised portions and recesses which are smooth as a whole (and therefore visually have a better impact) it is necessary to work with rather high machining thicknesses, producing undercuts which can cause problems in extraction from the injection mold or prevent it altogether.

[0004] Accordingly, the usual finishes produced by using the electrical discharge machining technique have a rough, opaque visual appearance and are not particularly pleasant.

[0005] The aim of the present invention is to provide a pen with plastic body that has an improved grip with respect to pens having a smooth body with a level surface and which visually has raised portions and/or recesses in the grip regions that have a smooth finish.

[0006] Within this aim, a consequent primary object is to provide a pen whose improved-grip regions can be provided with raised portions and recesses arranged in an orderly manner so as to form designs, lettering or others.

[0007] Another important object is to keep the thickness of the body equal to the thickness of pens having a level surface and a smooth finish without weakening the body.

[0008] Another object is to provide a pen that can be mass-produced at low cost with conventional equipment and systems.

[0009] This aim and these and other objects which will become better apparent hereinafter are achieved by a pen with plastic body, characterized in that the outer surface, at least in the hand grip regions, has at least partially a finish produced by photoengraving.

[0010] Further characteristics and advantages of the invention will become better apparent from the detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is an enlarged-scale view of a brass model used to produce the pen body according to the invention;

Figures 2, 3 and 4 are schematic views of the various steps of the manufacture of the pen body;

Figure 5 is a side view of the pen according to the invention.

[0011] With reference to the figures, the body 10 of a pen 11 according to the invention is provided starting from a brass model 12, which faithfully reproduces the external shape of what will subsequently be the body of the pen.

[0012] The brass model 12 is subjected to a surface treatment in regions 13, which will become the grip regions of the body 10, by photoengraving so as to provide a surface with raised portions and recesses arranged randomly, or a surface on which designs or other graphic markings are engraved.

[0013] The brass model is then immersed in a galvanic bath 14, and a layer 15 of nickel with a thickness of approximately 4-5 mm deposits on its surface.

[0014] When the model 12 is removed from the bath and separated from the nickel layer 15, a matrix (designated by the same reference numeral) is thus produced which is then used as a female mold element for the injection-molding of the body 10.

[0015] Figure 4 schematically illustrates molding performed with the nickel matrix 15, a male element 16 and the body 10 formed between them by injecting melted plastics.

[0016] At the end of the molding operations, the body 10 is obtained, which exactly reproduces the shapes of the brass model 12.

[0017] Figure 5 illustrates the regions of the body 10 whose finish matches the photoengraving surface treatment.

[0018] Of these regions, the one designated by the reference numeral 17a has a herringbone pattern, while the regions designated by the reference numerals 17b and 17c have randomly shaped low-relief designs.

[0019] The visual effect that can be provided is that the raised portions and recesses still appear smooth (although the photoengraving finishing treatment can provide a rough finish).

[0020] In practice it has been observed that the intended aim and objects of the present invention have been achieved.

[0021] The body of a plastic pen has in fact been provided which has improved-grip regions having raised portions and recesses which do not produce undercut problems for mold extraction operations.

[0022] The pen body can be mass-produced at low cost.

[0023] In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to requirements.

[0024] The disclosures in Italian Utility Model Application No. PD2000U000056 from which this application claims priority are incorporated herein by reference.

[0025] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of

example by such reference signs.

Claims

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1. A pen with plastic body, **characterized in that** the outer surface, at least in the hand grip regions, has at least partially a finish produced by photoengraving.
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2. The pen with a body, **characterized in that** raised portions and/or recesses of said regions formed at least partially by photoengraving are randomly shaped.
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3. The pen with a body according to claim 1, **characterized in that** said regions having at least partially a finish produced by photoengraving have recesses and raised portions distributed so as to form patterns, designs, lettering or the like.
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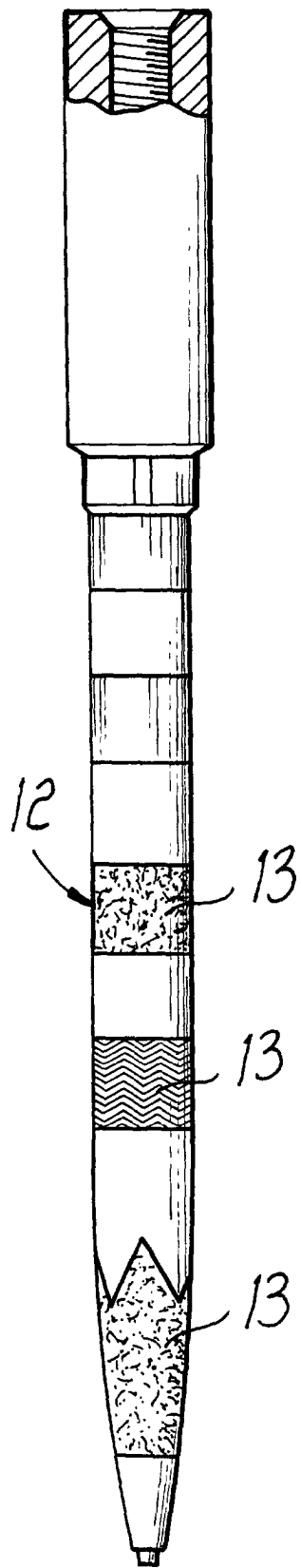


Fig. 1

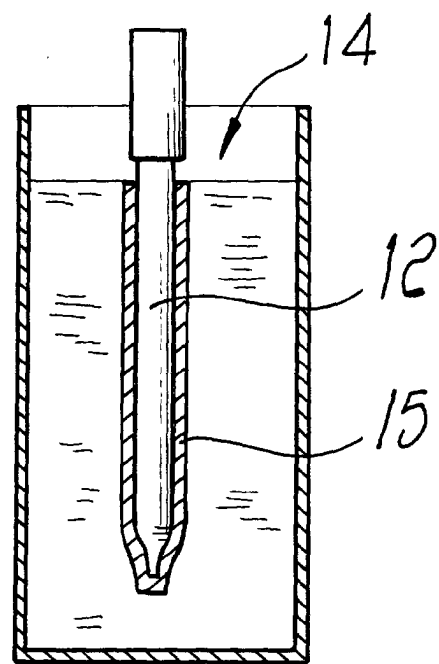


Fig. 2

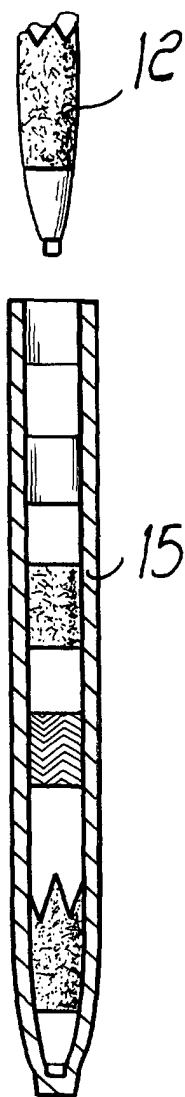


Fig. 3

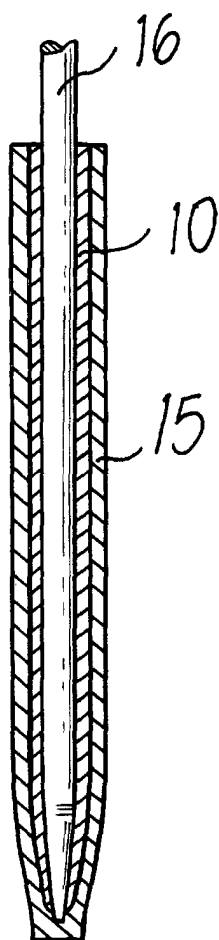


Fig. 4

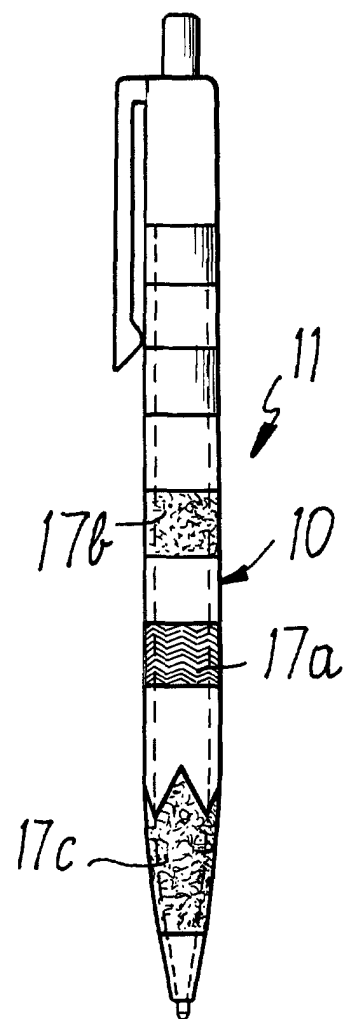


Fig. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 01 11 7791

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.7)
Y	EP 0 982 151 A (KOTOBUKI & CO) 1 March 2000 (2000-03-01) * column 4, line 10 - column 8, line 14; figures *	1-3	B43K23/008 B43K5/00
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B43K G03F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 6 November 2001	Examiner Perney, Y
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			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 11 7791

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The members are as contained in the European Patent Office EDP file on
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06-11-2001

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82