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(54) Stamping method

(57) Method for stamping graphic patterns on a metallic body, comprising a step of stamping of at least one graphic pattern on at least one portion of the outer surface of the above-mentioned metallic body and at least one step of surface removal of material near or adjacent to said at least one graphic pattern stamped on said at least one portion of the outer surface of said metallic body.

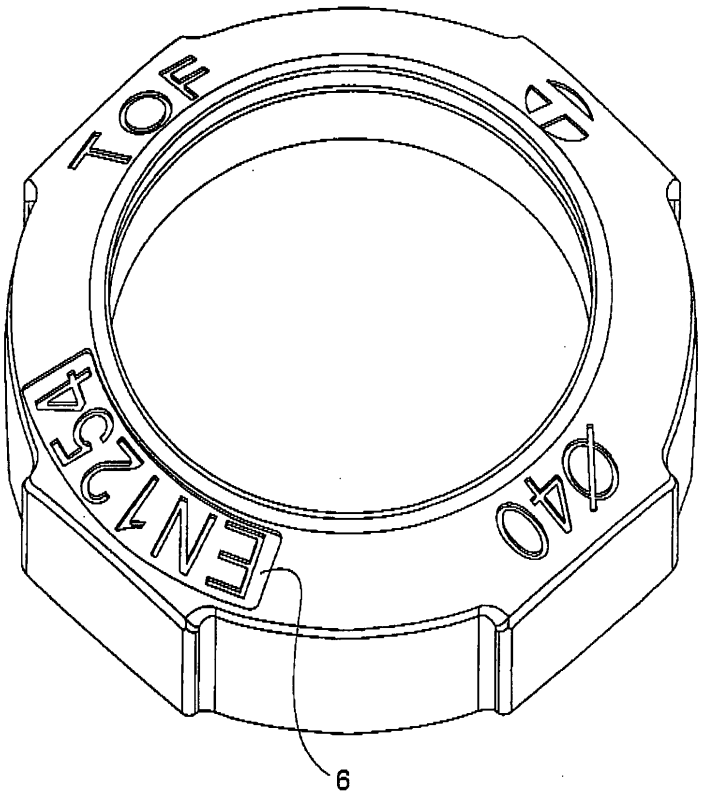

Fig. 2

EP 1 847 406 A1

Description

[0001] The present invention concerns a method for the production of graphic patterns, such as signs (i.e. writings), logos, designs or other, on the outer surface of a metallic body.

[0002] Preferably, hereinafter, the term "metallic body" will refer specifically to bodies of valves and of related components, such as, for example, couplings or ring nuts, although the method subject of the present invention can be equally applied to any metallic body produced by means of a known technological process, such as, for example, pressing, casting, chip removal machining or other. It will be obvious to a person skilled in the art, however, that the present invention applies preferably to metallic bodies obtained by pressing.

[0003] It is known that on the outer surface of valves, or ring nuts, or couplings, or similar components, a graphic pattern is usually stamped (i.e. printed) such as, for example, sign or a logo or a design or other, acting as "signature" identifying the individual product or the company or the person that produced or designed the mechanical part in question.

[0004] Said operation is normally performed during pressing of the final mechanical component. In practice, one of the dies of the tool bears in relief the characters or the logo or other to be stamped on the final mechanical component. At the end of the pressing operation, the entire metallic body can undergo various surface finishing operations, for example sand-blasting or polishing or other similar operations, and the graphic pattern, engraved on the outer surface of said metallic body, can be seen by anyone.

[0005] Nevertheless, the pattern obtained on the surface of the metallic body via the stamping operation is very often not easily legible due to the inherent difficulty connected with the stamping of complex forms such as alphanumerical characters.

[0006] In addition, with the passing of time the sign or logo or anything else stamped on the outer surface of the body inevitably undergoes a process of deterioration which can be partial or even total.

[0007] Furthermore, even when the sign is legible, very often it is not easy to determine its exact position on the surface of the metallic body: in fact the sign is difficult to distinguish from the surrounding outer surface portion.

[0008] This also applies to sign or logos or other produced by means of spark erosion. Said operation, in addition to being particularly laborious and costly, inevitably involves an increase in the manufacturing times of the finished mechanical part.

[0009] The aim of the present invention is to improve the legibility of the graphic patterns, such as sign, logos or similar, present on the outer surface of mechanical components in general, preferably valves or couplings or ring nuts, so as to facilitate the reading thereof and simplify their identification on the surface of the metallic body.

[0010] A further aim of the present invention is to devise a method that permits the above to be obtained via a simple mechanical operation that can be performed rapidly.

[0011] These and other aims are achieved by the method for stamping of graphic patterns on a metallic body according to the first independent claim and the subsequent dependent claims, characterised in that it comprises a stamping step of at least one graphic pattern on at least one portion of the outer surface of said metallic body and at least one step of surface removal of the metallic material near or adjacent to said at least one graphic pattern stamped on said at least one portion of the outer surface of said metallic body.

[0012] It should be observed that, hereinafter, surface removal of material indicates a technological process designed to remove a surface layer of the portion of outer surface that contains the above-mentioned graphic pattern, via the use of appropriate machines such as, for example, milling machines or lathes or other machines able to perform similar mechanical operations preferably involving chip removal.

[0013] In this way, at the end of the material removal operation, the surface portion that contains the sign or logo or other graphic symbol is no longer substantially flush with the remaining outer surface of the metallic body, i.e. with the surface of the metallic body not involved in the material surface removal operation, and consequently the sign is much more opaque - resulting in a much greater visual contrast - than the portion of surface subject to the surface removal operation, facilitating reading of the sign or in any case the location thereof on the outer surface of the metallic body.

[0014] In practice, the surface removal of material creates a first difference in brightness between said outer pressed surface of the metallic body and the portion of machined outer surface containing the graphic pattern, and a second difference in brightness between the portion of machined outer surface containing the graphic pattern and the latter, in general fairly opaque, guaranteeing easier legibility and traceability of said pattern on the metallic body.

[0015] According to a particular embodiment of the present invention, furthermore, the method also comprises a surface finishing step, for example by means of sand-blasting, of the entire metallic body, prior or subsequent to the above-mentioned operation of removal of metallic material near the stamped graphic pattern, in order to further increase the visual contrast between stamped pattern and remaining portion of the metallic body.

[0016] Some particular embodiments of the present invention will now be described by way of non-limiting example with reference to the attached figures, in which:

- figure 1 is an axonometric view of the pressed metallic body, particularly of a ring nut for valves, with sign on the outer surface thereof;

- figure 2 is an axonometric view of the pressed metallic body and the sign at the end of polishing of the same;
- figure 3 is an enlarged axonometric view of the stamped and polished sign of figure 1.

[0017] With particular reference to said figures, **1** indicates the generic metallic body which in the preferred embodiment can be a ring nut designed to be fixed to a valve for the passage of fluids.

[0018] The metallic body, preferably a ring nut, **1** is produced by means of a pressing operation.

[0019] According to the preferred embodiment of the invention, on the outer surface **3** of said ring nut **1** sign **5** is produced by means of stamping or coining. Said sign **5,** again according to the preferred embodiment, can be produced either during pressing of the metallic body **1** or subsequently to it, in a second step, although the first solution is preferable to the second as it permits elimination of an extra operation.

[0020] It should furthermore be observed that the outer surface **3,** although in the embodiment described here is curvilinear, in a further embodiment of the invention is not necessarily curvilinear and can be, for example, straight or any other shape.

[0021] Stamping of the sign **5** is followed by surface removal of material near the portion **6** of the outer surface **3** which contains said stamped sign **5** or which in any case is adjacent to said sign **5.**

[0022] The surface removal step can be performed via the use of cutters appropriately shaped to produce particular forms of the portion **6** of outer surface **3** or, in the case of machining of the entire outer surface **3** (not shown here), can advantageously be performed also via the use of a lathe, for example, and in any case always via the use of a machine tool for chip removal. Said removal of a surface layer of material varies according to the shape of the outer surface **3** on which the sign **5** is produced and the aesthetic effect required.

[0023] The final effect of said process is to give the machined surface portion **6** a bright finish with respect to the non-machined outer surface **3,** making the sign **5** on the metallic body **2** immediately identifiable and, as a result of the marked contrast in brightness created, after machining of the surface portion **6,** between the portion **6** and said sign **5,** to facilitate reading of the sign **5** since it is more opaque than the portion **6.**

[0024] Preferably prior to the removal of material near the sign **5,** the entire outer surface **3** can undergo a surface finishing operation such as, for example, sand-blasting or shot-blasting or in any case any other surface operation suitable for giving the outer surface a certain uniformity and, at the same time, increasing the opacity thereof. Said sand-blasting step can be performed via the use of abrasive grains which subject the surface **3** to a high pressure and abrasion action suitable for deforming the surface **3** and making it even more opaque. The end result of the material surface removal operations, combined if necessary with the previous sand-blasting operation of the outer surface **3,** is that of obtaining a sign **5** or a portion **6** of outer surface **3** containing the sign **5** no longer flush with the outer surface **3** of the metallic body **1,** and a difference in brightness between the outer surface **3,** the portion **6** and the sign **5.**

[0025] In this way the user can immediately trace the sign **5** on the outer surface **3** of said body **1** and read it easily.

[0026] Furthermore the metallic body **1** thus machined can undergo galvanic treatment for coating the outer surface **6,** such as, for example, nickel plating or chromium plating so as to further highlight the differences in brightness between the sign **5** and the surface portion **6** containing it or the outer surface **3.**

[0027] Finally it should be pointed out that the definition: "outer surface **3** of the metallic body **1"** also comprises the surface of the body on the side of the metallic body **1** that is not directly visible such as, for example, the inner side of the bodywork of a car or a protective metal shell of a device or other not cited here.

[0028] It should also be pointed out that the surface removal operation can also involve the entire outer surface **3** of the metallic body **1,** without departing from the scope of protection of the present invention.

[0029] Furthermore all the details can be substituted by others that are technically equivalent.

Claims

1. Method for stamping graphic patterns on a metallic body, **characterised in that** it comprises a step of stamping of at least one graphic pattern on at least one portion of the outer surface of said metallic body and at least one step of surface removal of material near or adjacent to said at least one graphic pattern stamped on said at least one portion of the outer surface of said metallic body.

2. Method as claimed in claim 1, **characterised in that** said step of surface removal of material is achieved by means of a chip removal operation.

3. Method as claimed in claims 1 to 2, **characterised in that** said surface removal step is preceded by a surface finishing operation of the pressed metallic body.

4. Method as claimed in claim 3, **characterised in that** said surface finishing operation of the metallic body is a sand-blasting operation.

5. Method as claimed in claims 1 to 4, **characterised in that** said surface removal step is followed by a galvanic treatment operation, for surface coating of the metallic body.

6. Method as claimed in any one of the preceding claims, **characterised in that** the stamping step of said at least one graphic pattern is performed simultaneously with the pressing step of said metallic body.

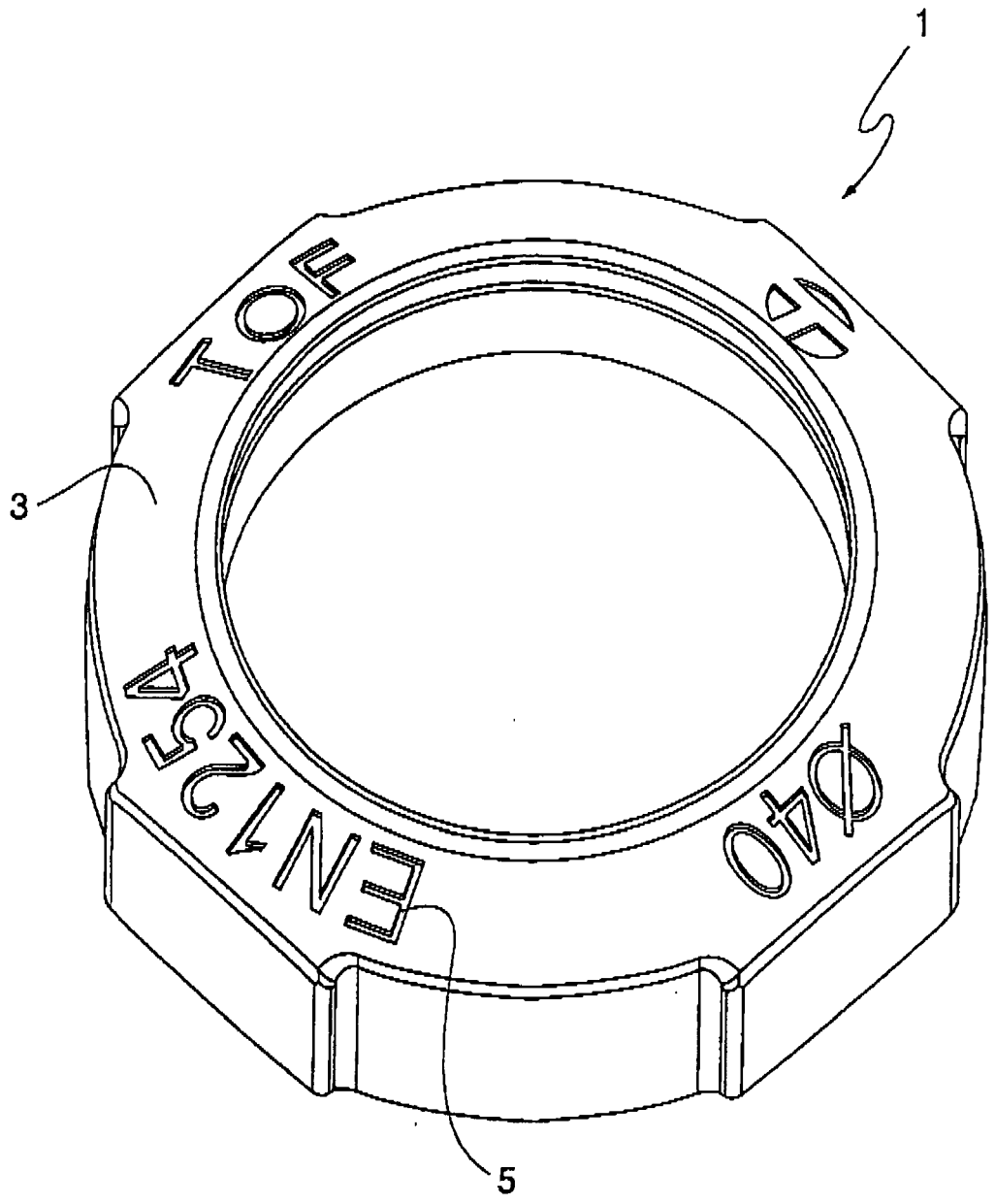

Fig. 1

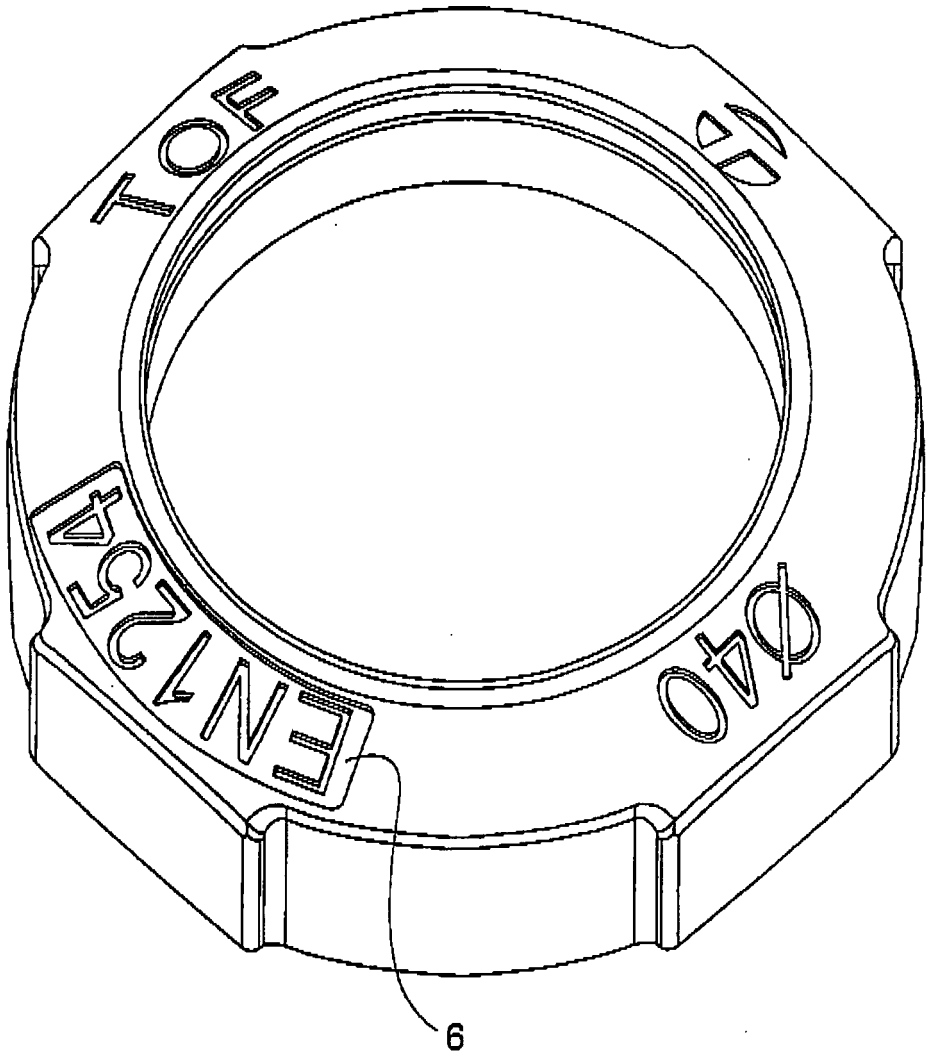

Fig. 2

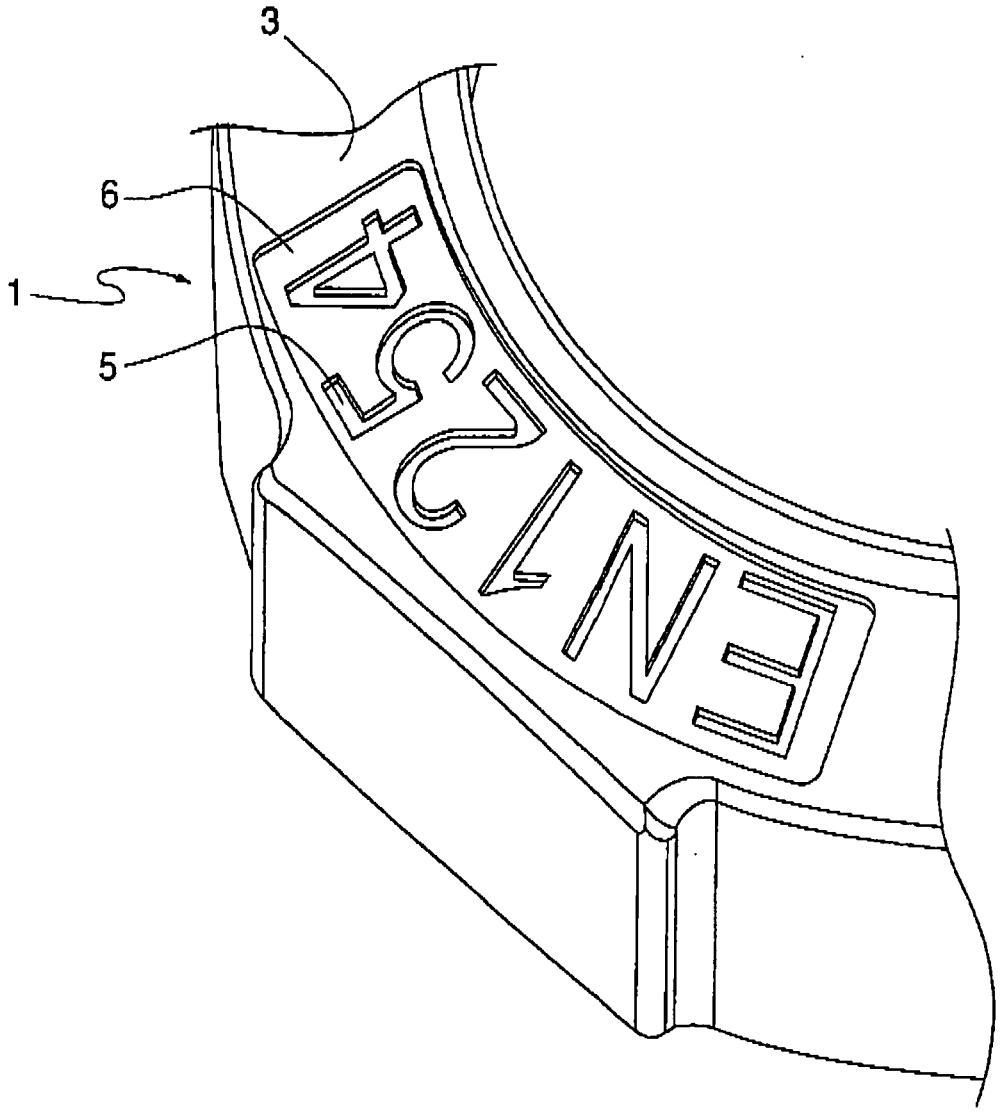

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 07 00 7296

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	DE 25 18 751 A (D.MONTAVON) 4 November 1976 (1976-11-04) * page 7, line 14 - page 9, line 2 * * page 11, line 3 - page 12, line 4 * * claim 1; figure 5 * -----	1,6	
A	GB 23555 A A.D. 1893 (TAYLOR EDWIN) 13 January 1894 (1894-01-13) * the whole document * -----	1-6	
A	GB 09660 A A.D. 1913 (OTT EMIL) 9 April 1914 (1914-04-09) * the whole document * -----	1-6	

TECHNICAL FIELDS SEARCHED (IPC)

B44C
B41M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 June 2007	Bacon, Alan

CATEGORY OF CITED DOCUMENTS

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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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11-06-2007

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