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(54) **PROCEDE DE MARQUAGE INFALSIFIABLE, INDELEBILE ET
CONTRASTE D'OBJETS NOTAMMENT ETIQUETTES**

(54) **TAMPER-RESISTANT, INDELIBLE AND CONTRASTING
METHOD FOR MARKING OBJECTS, IN PARTICULAR
LABELS**



(57) La présente invention a pour objet un procédé de marquage infalsifiable et indélébile d'objets et notamment étiquettes assurant un bon contraste et une visibilité accrue du marquage. Ledit procédé se caractérise essentiellement en ce que le marquage est réalisé en deux opérations: un marquage dans la masse, c'est-à-dire dans l'épaisseur de l'objet; un marquage en surface, ledit marquage en surface étant superposé au marquage dans la masse. L'invention a également pour objet une étiquette de marquage.

(57) The invention concerns a tamper-resistant and indelible method for marking objects, in particular labels, providing marking with good contrast and enhanced visibility. Said method is essentially characterised in that the marking is carried out in two operations: integral marking, i.e. in the thickness of the object; surface marking; said surface marking being superposed on the integral marking. The invention also concerns a marking label.

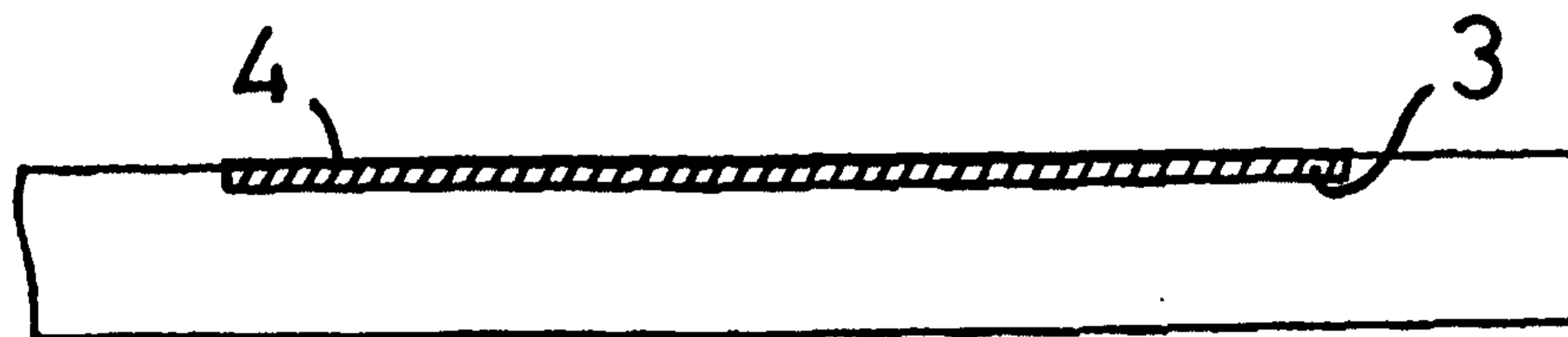
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(54) Title: TAMPER-RESISTANT, INDELIBLE AND CONTRASTING METHOD FOR MARKING OBJECTS, IN PARTICULAR LABELS

(54) Titre: PROCEDE DE MARQUAGE INFALSIFIABLE, INDELEBILE ET CONTRASTE D'OBJETS NOTAMMENT ETIQUETTES



(57) Abstract

The invention concerns a tamper-resistant and indelible method for marking objects, in particular labels, providing marking with good contrast and enhanced visibility. Said method is essentially characterised in that the marking is carried out in two operations: integral marking, i.e. in the thickness of the object; surface marking; said surface marking being superposed on the integral marking. The invention also concerns a marking label.

(57) Abrégé

La présente invention a pour objet un procédé de marquage infalsifiable et indélébile d'objets et notamment étiquettes assurant un bon contraste et une visibilité accrue du marquage. Ledit procédé se caractérise essentiellement en ce que le marquage est réalisé en deux opérations: un marquage dans la masse, c'est-à-dire dans l'épaisseur de l'objet; un marquage en surface, ledit marquage en surface étant superposé au marquage dans la masse. L'invention a également pour objet une étiquette de marquage.

METHOD OF MARKING OBJECTS, PARTICULARLY LABELS, THAT IS IMPOSSIBLE TO FORGE, IS INDELIBLE AND HAS CONTRAST

The present invention concerns a method of marking objects that is impossible to forge and is visible, providing good contrast and better visibility of marking,
5 and the objects marked in this way.

The present invention applies to, among other objects, marking labels used for livestock but can have other applications.

The marking of livestock is performed by fixing one or two labels to the animal's ear. The label carries marking constituted by signs and/or figures and/or letters,
10 part of which is used by the farmer to identify the animal in the field.

It has appeared necessary for these numbers to be indelible so as to be tamper-proof and so as not to serve as a medium for fraud. The label carrying the marking is generally made of a known type of synthetic material.

The indelibility of the marking has been achieved to date by the use of laser,
15 which has the effect of producing marking within the body or the thickness of the sheet constituting the label. However, this does not give accentuated contrast in comparison with the colour of the label; hence, reading from a distance is limited. Therefore, in France where labels are salmon-coloured for cattle, the use of laser engraving gives marking that is grey in colour.

20 The present invention aims to obviate these drawbacks.

To this end, the method according to the present invention of marking objects that is impossible to forge, is indelible and has contrast, is characterised essentially in that the marking is performed in two operations, marking within the body, i.e. within the thickness of the object, and surface marking superimposed
25 over said marking within the body.

According to yet another characteristic of the invention, marking is performed in two operations, marking by modifying the structure of the object by a thermochemical phenomenon, and a surface deposit.

According to another characteristic of the invention, the marking within the body is produced by laser engraving and the surface marking superimposed over the former is produced by inking, for example according to what is known as the ink-jet technique; or the other way round, i.e. the surface marking is added first and marking within the body, for example by laser engraving, is performed subsequently.

According to yet another characteristic of the invention, marking within the body is produced by spaced-out lines defining the contour of each sign, letter or figure, for example, between which a space is left, which is covered by the surface marking. Preferably, according to another characteristic of the invention, the lines are parallel.

Other advantages and characteristics of the invention will become apparent on reading the following description of an embodiment of the invention, given by way of non-exhaustive example illustrated by the attached drawings, in which:

- 15 - Figure 1 shows a plan view of a label with marking according to the invention;
- Figure 2 is a partial view showing, seen from above, the marking within the body according to the invention before the superimposition of surface marking;
- 20 - Figure 3 is a view in section along the line AA;
- Figure 4 is a view in section along the line AA representing the surface deposition after addition.

As illustrated in Figure 1, the label for marking animals, produced by implementing the method that is the subject-matter of the invention of which it forms an integral part, is constituted by a sheet of flexible synthetic material, for example polyurethane. This label carries marking constituted by signs, particularly letters and/or figures constituting the official identification number.

The letters and/or figures on the top line 1, in small characters, serve to denote the herd concerned. The letters and/or figures on the bottom line 2, larger in

size, since they occupy more than half the effective area of the label, serve to identify the animal within said herd.

It has become apparent that if it was essential for the whole number to be indelible and therefore impossible to forge, it was also essential for the second
5 number, the one identifying the animal, to be easy for the farmer to read, even from a distance, hence the dimensional importance given to that part of the number.

The search for tamper-proof properties and the impossibility of erasing the number wholly or partly has very quickly led to the use of marking the label
10 within the body.

The known and envisageable technique of recessed engraving of the signs constituting the number is not satisfactory since it does not modify the colouring of the material of the label. Colouring by the addition of surface pigments is satisfactory from the point of view of the legibility of the number from a distance.
15 However, these pigments can be erased with time, particularly by the use of solvents.

According to the invention, the method used calls for marking in two operations:

- marking within the body of the medium constituted by the sheet of the label;
- surface marking superimposed over the marking within the body, i.e.
20 produced within the same contour as the signs, figures or letters produced by the first marking.

The converse can be done, i.e. it is possible first to produce surface marking and then to produce marking within the body, superimposed over the former.

This combination of two superimposed markings makes it possible to obtain
25 visible and indelible marking, since even if the surface marking came to be erased or was intentionally erased, the marking within the body remains and makes it possible to detect fraud. In the event of fraud, the signs letters or figures of the fraudulent marking would not be superimposed over the marking within the body.

According to the method that is the subject-matter of the invention, marking within the body is produced by engraving and is hence indelible. The marking is produced according to one embodiment of the invention by modifying the structure of the material of the label by a thermochemical phenomenon and the surface marking is produced by deposition of suitable material, preferably coloured or pigmented. The engraving is carried out by a laser beam or by any other means.

Figure 3 is a view in section of a label after it has been produced on which the laser marking, with the reference number 3, is illustrated.

10 Figure 4 is a view in section of a label after it has been produced on which the surface marking, with the reference number 4, is illustrated, the laser engraving or marking 3 being shown hatched.

According to the invention, the marking is carried out by modifying the structure of the label (or the object to be marked) by a thermochemical phenomenon and, by surface deposition of coloured and/or pigmented material.

Marking by laser beam gives signs, letters or figures in a dull colour, in grey shades; however, it has the advantage of penetrating into the body by deep thermal and chemical transformation thereof. It is hence indelible.

20 Preferably, the surface marking is produced by adding a colouring pigment, which makes it possible to obtain a good effect of visibility of the marking. The pigments can come from an ink according to the known ink-jet technique, or be added in any appropriate manner.

As illustrated in Figure 2, which is a very enlarged partial view of a sign added to a label according to the invention, the marking within the body is, in one embodiment, produced by parallel lines 5 defining at least the contour of each of the signs, figures or letters to be produced.

Between each of the lines 5, a gap 6 or space is left, covered only by the surface marking, which also covers the whole zone delimited by the marking within the

body, one being superimposed over the other. Laser marking can also be carried out without there being the gaps 6 mentioned above.

According to another embodiment, the laser marking is produced by lines forming loops or other geometric figures and defining at least the contour of each of the signs, figures or letters to be produced, the lines being sufficiently far apart
5 to leave between them gaps or spaces intended to be covered by the surface marking.

Within the context of producing marking according to the invention on a label for livestock, at least some of the signs, for example those on the bottom line, are
10 produced by superimposing the marking within the body and the surface marking. However, all the marking of the label can be produced by superimposing the two markings.

CLAIMS:

1. A method of marking labels consisting of signs, letters and/or figures that cannot be tampered with, is indelible and has contrast, for animal identification, characterised in that the marking is carried out within the body, ie within the thickness of the object and either before or after, also on the surface, at least part of the lines of the marking in the body and the marking on the surface being located so that they are superimposed.
2. Method according to Claim 1 characterised in that the marking in the body is produced with laser engraving and the surface marking is inked.
3. Method according to Claim 1 or 2 characterised in that marking in the body is made by lines defining the outlines of each sign and between them is left a space covered by the surface marking.
4. Method according to Claim 3, characterised in that the lines form loops.
5. Animal identification label produced by using the method in Claim 1 and any one of Claims 2, 3 and 4 made of a synthetic material, the signs making up the marking it carries are to be executed at least partly by marking within the body and on it is to be fixed and superimposed a surface marking, some of signs within the body being identical to the surface-marked signs.
6. Animal identification label as claimed in Claim 5 wherein all the signs that make up the marking are carried out by marking within the body and some of these signs have a surface marking superimposed on the marking within the body.
7. Animal identification label as claimed in Claim 6 wherein the marking within the body is carried out by engraving and the surface marking is carried out by the application of pigment.
8. Animal identification label as claimed in Claims 6 and 7 wherein the marking is carried out by modification of the label structure by a thermochemical process and by a surface application.

