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(54) Title: METHOD AND DEVICES FOR THE IDENTIFICATION OF PACKAGED OBJECTS

(57) Abstract: The method for the identification of packaged objects, preferably cigarettes in cigarette packages, by means of authenticating marks including visual and/or electronic identification means distinguishes itself by the fact that at least two different authenticating marks are provided. For the end user of the cigarettes, this means that the packaging foil and/or the cigarette package comprises at least two visually recognizable marks which are published in order to be able to ascertain the authenticity of the package and of the content. One of the authenticating marks may be a special embossing producing a shadow effect.

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Method and Devices for the Identification of Packaged Objects

The present invention refers to a method for the
5 identification of packaged objects according to the preamble
of claim 1, more particularly to the authentication of
cigarette packages, respective of cigarettes, as well as to
devices implementing the method.

10 For various reasons and due to the inexpensive possibilities
of transporting goods over long distances, it has become
increasingly interesting for certain organizations to
imitate known products and to sell them under the
corresponding known trademarks or brands. This is
15 particularly true for cigarettes, where it is increasingly
attractive to sell falsifications due to high taxes and
since the market is very large. The technical possibilities
of the state of the art allow deceptive imitations of
trademarks and other imprints and even of security elements
20 such as tear-off strips on packages, more particularly on
cigarette packages, so that the end user is unable to
discern whether the cigarette package is genuine or false.
Of course, this is also true for other goods.

25 Different attempts to ensure the authenticity of cigarette
packages are known. Thus, it is known from CN-A-108 67 84
to provide cigarette packages with holographic strips, or
from CN-A-107 82 78, to wrap the cigarette packages in
cellophane paper of changing colors. However, with the
30 necessary efforts, similar holograms or cellophane papers
can be produced which are not distinguishable from the
genuine ones by the customer or, in the case of contraband,
by the retailer.

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From US-A-5 764 874 it is known to use relatively complex image processing techniques for a quick detection of certain properties of passing cigarettes, e.g. the correct gluing of the cigarette paper, while US-A-5 365 596 discloses a method and devices for the automatic optical control of cigarette packages. However, the methods disclosed in the cited references are unsuitable for the authentication of cigarettes respective cigarette packages by retailers or by the end user. This is also true for US-A-5 190 428, which describes a general coding of elongated objects but is directed to detecting whether the cigarettes comprise filters.

US-A-5 762 377 discloses a method and a device for ascertaining the authenticity of packages which distinguishes between a security element, e.g. a band or a magnet strip, which ensures the intactness of the goods, and an authenticating means, e.g. a hologram, and suggests always to unite the two elements on the same label or tag which is applied to the object.

Ultimately, from US-A-5 007 271, US-A-5 598 774 and EP-A-925 911 of the same applicant, methods and devices are known which allow a precise and clean embossing of packaging foils. Embossings of this kind are quite difficult to imitate and offer a certain protection from imitations. However, since the cigarettes with the packaging foil are contained in a box, it is only possible to ascertain whether the cigarettes respective the packaging foil is genuine when the box is open, i.e. after its purchase. Moreover, in this case, the end user has to know what the genuine embossed

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packaging foil, which guarantees the genuine content, should look like.

On the background of this prior art, it is a first object of the present invention to provide a method and devices
5 implementing the method which allow to verify the authenticity of the content of a packaged object with high security. This object is attained by the method according to claim 1.

10

Devices implementing the methods are defined in claims 13 and 15. Further embodiments and advantages of the invention are defined in the dependent claims.

15 The invention will be explained in more detail hereinafter with reference to exemplary embodiments. The examples relate to the authentication of cigarette packages, respective of cigarettes, but it is apparent that the described methods and devices can also be used for other
20 objects, e.g. from the pharmaceutical industry, such as capsules or pills, as well as for objects like PC cards or other objects of any kind.

Generally, between the manufacture of the objects concerned
25 here and the ultimate consumer, four different commercial levels are involved:

1st level: the manufacturer, who applies the codes for subsequent verification;

30

2nd level: the distributor, who has a first possibility of authenticating the goods;

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3rd level: the retailers, who have another possibility of authenticating the goods; and

4th level: the end user, who has to be able to determine the
5 authenticity of the goods as well.

According to the invention, at the first level, different codes or authenticating means are applied. In the manufacture of tobacco products, the individual cigarettes,
10 wrapped in a packaging foil or not, are inserted in cigarette packages which mostly consist of cardboard, and the packages are inserted in boxes and the latter packaged in containers which are the smallest unit shipped to the distributor. According to the invention, authenticating
15 means or codes may be applied at all levels, i.e. to cigarettes, wrappers, packages, boxes, and containers, randomly combined with each other, and read and analyzed visually or by a machine.

20 Generally, groups of cigarettes are wrapped in foils and inserted in a cigarette package in this form. One side of these foils may be coated with metal, more particularly with aluminum, their support consisting of paper or another fibrous material, or they may be made of synthetic
25 materials, of metal, or of compound materials.

In addition to the previously known embossing techniques as mentioned in the introduction, the packaging foil may be provided with a special embossing, e.g. one which produces a
30 variable shadow effect depending on the viewing angle. A shadow embossing of this kind can be produced by means of the mentioned devices of the applicant, the teeth of the individual embossing rolls being arranged and/or

synchronized in such a manner as to produce a shadow effect embossing, whereby the teeth of the embossing rolls are formed to produce such shadow effects on the packaging materials. A shadow effect embossing is also thinkable
5 independently of the profile or the arrangement of the teeth on the embossing rolls, for example by relief embossing.

Furthermore, with further special embossing methods, it is possible with the mentioned embossing machines to produce
10 hologram effects or to provide the embossed patterns with microstructures which produce an interference and can be identified by suitable detectors. It is also possible to produce a second embossing or to provide a partly or entirely colored embossing. For the verification of the
15 authenticity of the package, respective of the packaging foil, the packaging foil comprises at least two of the mentioned marks.

Furthermore, in addition to the known identification marks
20 such as trademarks and/or other imprints, the identification by means of an embossing includes the mentioned relief embossing on the package or box, i.e. externally, combined with a shadow embossing which is also provided externally, and/or combined with one of the embossings on the packaging
25 foil. Moreover, the special embossing on the box or on the packaging foil can serve as a bar code or another code which is readable by the eye or machine-readable. However, the special embossing code should not be confoundable with the conventional bar code. The special embossing code can be
30 applied in such a manner that it is only recognized by a suitable automatic reading method. Also, visible or invisible codes may be provided individually or on different portions of the glazed foil.

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Furthermore, the cigarette package can be provided with windows which allow to read the authenticating marks on the packaging foil through the package. With special techniques
5 using radiation of a suitable wavelength, it is even possible to read the code through the package without the need of providing it with special windows. Such codes may also be provided in the box itself, e.g. on the underside thereof.

10

Some or possibly all of the authenticating marks may be periodically or sporadically changed, and the currently valid code(s) may be communicated to the retailers and possibly also to the end users, e.g. by a notice at the
15 sales points. Of course, other coding means can be provided which are known per se, e.g. directly on the cigarette, on the tip covering, on the cigarette paper, or on the filter, where olfactory, color or acoustic marks can be used, as well as hologram techniques or other surface effects such as
20 special inks.

While a great number of authenticating marks can be visually verified by the vendor or the end user, other ones of the described marks can be controlled by machines which per se
25 are known from the prior art. The reading of optical marks such as embossings and special embossings is possible with machines built according to the prior art and adapted to the purpose. According to the invention, in order to attain an increased security against falsifications, at least two of
30 the described marks are provided on a cigarette package as it is purchased by the end user. In this manner, the end user can determine its authenticity in two different ways. Either the falsifications have no codes respective codes of

lesser quality, or the currently valid code, possibly along with another code, is posted at the tobacco shop and/or published somewhere, e.g. on the internet or in newspapers.

- 5 Furthermore, the authentication marks are preferably realized in such a manner that they take account of the general appearance and the esthetic of the packages, thereby serving not only for security, but also for sales promotion.
- 10 Further possibilities for the identification of cigarettes result from the application of electronic means. Thus, recently, so-called transponders have been introduced, which serve e.g. for the identification of motor vehicles, of pieces of laundry, or of other objects. The transponder
- 15 according to EP-B-762 535, which describes a thin and flexible antenna for a small transponder, shall be cited as an example. Other small transponders are known from the prior art. Thus, for example, each container may be provided with a transponder which is continuously
- 20 reprogrammed with a new code according to the time of production or the location, etc., and placed in the container at some point.

According to a method of the invention, the signals of the

25 transponders and their evaluation are multiple encoded by encrypting both the information of the transponder and the readout algorithm in the reader. The encryption of the transponder information is limited by the storage capacity of the transponder. The encryption is preferably performed

30 with the latest known methods, e.g. with continuously changing authenticating marks which are only known to their owner.

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- Furthermore, so-called hardware locks, dongles or dongle keys, as well as so-called software locks or softkeys may be used, which are more difficult to break. The maximum security is ensured if two different keys are used, e.g. including a remotely reprogrammable key. The keys can be used purely locally with the reader respective PC and/or in combination with keys which are e.g. only available on the server of the device.
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- 10 The readout requires a modem connection to the manufacturer, and the code is only deciphered when the decoder, which must be recognized by the manufacturer as well, is booted by the employee in charge. The code is only deciphered when the decoding algorithm is established in a random access memory.
- 15 The latter may subsequently be deleted or is cleared e.g. when the device is turned off. Other cryptographic methods requiring an additional identification of the user are also possible.
- 20 Basically, this procedure may be performed at all levels, i.e. at the level of the cigarette, of the packaging foil, of the cigarette package, and/or of the cigarette container, and the control station may be operated by the distributor and/or the retailer. This represents an additional control
- 25 possibility, and the electronic control by means of transponders may be combined with the other previously described optical or other methods.

Readers for the identification of signals transmitted by transponders are known per se from the prior art.

30

The preceding description shows that combined authenticity marks and control instances can be used at all levels and in

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all stages and combined with each other or with other marks and control instances. Thus, the authenticity can be ascertained at all commercial levels in an automated manner. This can be effected without the need of opening the
5 packages or of analyzing the goods, and independently of the type of package. At the upper level, i.e. at the level of the distributor respective wholesaler, at least two verifications can be effected, which is also possible at the retail level. At the level of the end user, the
10 verification can be effected optically by at least two marks, and the authenticity can be ascertained through the publication of the corresponding code at the store or in other media.

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Claims

1. Method for the identification of packaged objects by means of authenticating marks including visual and/or
5 electronic identification means, characterized in that in addition to possibly existing security elements for the purpose of ascertaining the intactness and for the surveillance of the goods, at least two locally separated authenticating marks for the same packaged objects are
10 identified, at least one of the authenticating marks being also locally separated from the security element.

2. Method according to claim 1, characterized in that the objects to be identified are cigarettes which are disposed
15 without a wrapper of packaging foil in a package, at least two authenticating marks being provided or incorporated on the cigarette package and/or on each individual cigarette, and the marks being identified visually or by machines, whereby one of the authenticating marks is applied to the
20 packaged object in the form of a special embossing producing a shadow effect and whose brightness seems to vary according to the viewing angle.

3. Method according to claim 1, characterized in that the
25 objects to be identified are cigarettes which are wrapped in a foil and disposed in a package, the foil and the package comprising at least one embossing each, or the foil or the package comprising at least two different embossings which are identified visually or by a machine, whereby one of the
30 authenticating marks is applied to the packaged object in the form of a special embossing producing a shadow effect and whose brightness seems to vary according to the viewing angle.

4. Method according to claim 1, characterized in that at least one of the authenticating marks is a special embossing producing hologram effects which are visually recognizable.

5

5. Method according to claim 1, characterized in that at least one of the authenticating marks is a special embossing which is invisible to the naked eye and recognizable by corresponding optical apparatus.

10

6. Method according to claim 1, characterized in that at least one authenticating mark on the packaging foil is machine-detectable through the cigarette package.

15 7. Method according to claim 6, characterized in that the cigarette package comprises corresponding windows.

8. Method according to claim 2 or 3, characterized in that each individual cigarette comprises at least one authenticating mark which is provided or incorporated on the cigarette paper, and/or on the tip covering, and/or on the filter.

20 9. Method according to claim 2 or 3, characterized in that in addition to the authenticating marks on the cigarettes and/or on the packaging foil and/or on the cigarette package, transponders are provided which are arranged in a cigarette package and/or cigarette box and/or cigarette container, and which are readable individually.

30

10. Method according to claim 9, characterized in that the signals generated by the transponders are detected and evaluated by a reader, the signals being multiply encoded.

11. Method according to claim 10, characterized in that both the transponder signals and the reading algorithm of the reader are encrypted.

5

12. Method according to claim 10, characterized in that hardware locks and/or softkeys are used.

13. Device implementing the method according to claim 1,
10 characterized in that it comprises an optical reader which is apt to identify and display embossed authenticating marks.

14. Device according to claim 13 for implementing the
15 method according to claim 6, characterized in that the reader comprises means allowing to identify and display embossed authenticating marks through a package.

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INTERNATIONAL SEARCH REPORT

Int. l. Application No
PCT/CH 00/00607

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G09F3/00 G09F3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	US 5 241 299 A (MAZOKI GARY T ET AL) 31 August 1993 (1993-08-31) abstract; claims; figures ---	1-6,8-14
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/CH 00/00607

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