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(54) **Visual tamper evident security seal**

(57) Seal which is made up of a main body (1) with an inner cylindrical cavity which is indented in the perimeter; a rotary element (2) with flaps around is fitted into the cylinder. The main body (1) and the rotary element (2) have six holes (5,6,7,8,11,12) to allow the introduction of a wire through them, in such a way that when the rotary element (2) turns around, it winds the wire onto the rotary element (2) itself and it cannot be unwound unless the main body (1) is broken apart. Therefore the tampering becomes evident. The seal includes several ways to avoid the reconstruction of the broken seal, leaving evidence of the tampering.

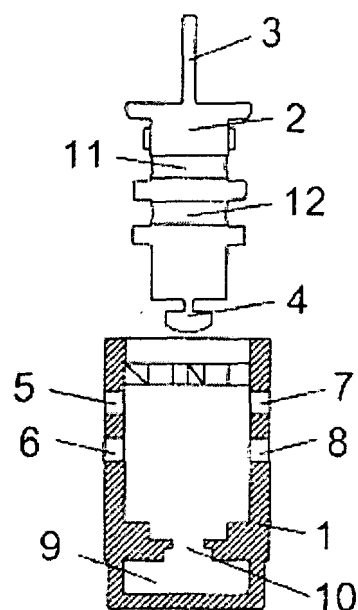


FIG. -1

Description

FIELD OF THE INVENTION

[0001] The present invention refers to a seal which is made up of a main body with an inner cylindrical cavity which is indented in the perimeter; a rotary element with flaps around is fitted into the cylinder; for this reason, once the rotary element is introduced into the main body and both elements are assembled, the rotary element can turn only in a direction, and it prevents reverse rotation since the indentation in the main body stops it.

[0002] Both the main body and the rotary element have two holes to allow the introduction of a wire of the appropriate size through them, in such a way that when the rotary element turns around, it winds the wire onto the rotary element itself and it cannot be unwound unless the main body is broken apart, and therefore, the tampering becomes evident.

[0003] The present seal shows significant improvements in comparison with the background state of the art, since it includes several ways to avoid the reconstruction of the broken seal, leaving evidence of the tampering.

BACKGROUND OF THE INVENTION

[0004] The state of the art includes different types of seals which are made up of a main body, a rotor and a wire which interacts with the aforementioned elements for the locking of the seal.

[0005] As a distant precedent, we shall indicate:

U0290449, with the title "Metal Seal", and application date 20th November 1985. Distant precedent which consists of a seal made up of two pieces, one of them presenting two conformations through which the loose ends of a wire are introduced.

[0006] As a recent precedents, we shall indicate:

P9100244, with the title "Rotary Seal" and application date 30th January 1991. It describes a rotor embedded in a chamber. The rotor includes different mechanisms aimed to avoid the separation of the pieces.

[0007] U200601854, belonging to this applicant and with the title "Improved Rotary Security Seal", filed on the 4th August 2006, which presents several innovations: 1) inclusion of a lug on the lower part of the rotor, 2) side placement of a closed information label detachable by pulling 3) presentation in combs with different number of seals which can be removed manually.

[0008] All the aforementioned inventions require for their application a metal wire of the appropriate size for the sealing of the element we are dealing with.

[0009] In most instances, this kind of seals are made

up of two elements, namely a main body which normally carries the information on a printing area, and a rotary element to be introduced into the former in such a way that they are fixed together by the tongue-and-groove joint of both pieces, specifically on an exposed area located on the rim of the main body.

[0010] This joint may become somewhat weak and therefore it may be possible to uncouple both elements in order to change either the sealing wire or the main body with the information printed on the tag, and all that without leaving any visual evidence of the tampering. Thus the content of the sealed element can be accessed without leaving any evidence of the fact.

[0011] In the particular case of U200601854, belonging to this applicant and with the title "Improved Rotary Security Seal", it is possible to uncouple the two elements that make it up and if the lug located on the lower part of the rotor is broken away, it can be replaced in the original position by means of adhesive, showing no visual evidence of the tampering.

DESCRIPTION OF THE INVENTION

[0012] The present invention concerns a rotary seal like those made up of two pieces: a main body with an inner cylindrical cavity which has an indentation in the perimeter and a rotary element that is axially fitted into the main body and which presents two opposing flaps.

[0013] Once the rotary element has been introduced into the main body, both elements become coupled as we will show bellow. That is why the turning of the grip that the rotary element has on the top causes the action of the flaps against the indentation of the perimeter and makes the turning possible in just one direction and prevents reverse rotation.

[0014] The rotary element has a protuberance at the bottom which acts as a stopper when it gets lodged in the compartment that the main body has for this purpose. The mentioned protuberance and the rotary element are joined together by a weakening line that allows the separation of the parts when the rotary element is removed from the main body. In that case, the protuberance serves for evidence of the opening since it will remain loose but inaccessible inside the translucent capsule at the end of the main body.

[0015] The main body has at least four holes distributed in the following way:

Two holes on one side of the main body and two holes on the other side of the main body and opposite the aforementioned ones.

[0016] In order to use the seal, the wire must be introduced into the upper side hole, then through the hole that the rotary element has for that purpose and finally it goes out through the opposing upper side hole; a bowknot is made with the wire in order to go through the holes or rings of the object we need to keep sealed, and then the

wire is introduced again into the lower side hole of the main body, it goes through the rotary element and goes out through the opposite hole. When the grip is turned, a bit of the wire is caught in the bowknot and the object in question becomes perfectly sealed since the interaction of the flaps of the rotary element with the indentation of the cavity makes it turn on one direction and never the on the opposite one.

[0017] The main body may include a tag or printing area on one side where to include serial numbering or identification of the seal. The printing on the tag not necessarily coincides with; the printing on the main body. The tag may be attached to the main body along a weakening line which makes it easier to detach the tag manually by pulling.

[0018] The seals may be presented in combs of different number of units, joined together with a small quantity of a material which makes them easy to separate manually, for better selection and control at work.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

Figure 1: It shows an exploded view of the seal before its two elements are coupled, namely the main body with a translucent capsule at the bottom and the rotary element.

Figure 2: It shows a cutaway view of the seal with the two elements coupled.

Figure 3: Cross-section of the seal, showing the action of the flaps against the indentation in the inner perimeter of the main body.

Figure 4: Exploded view of the seal from an upper angle showing the two elements which it is made of.

Figure 5: Section of the seal showing a typical instance of usage sealing an object.

Figure 6: Section of the seal with both elements uncoupled and with the protuberance inside the translucent cap that the main body has for this purpose.

DETAILED DESCRIPTION AND PREFERRED EMBODIMENT

[0020] From the explanatory drawings we can observe that the present invention concerns a rotary security seal, made up of two pieces: a main body (1) with an inner cylindrical cavity which has an indentation (15) in the perimeter and a rotary element (2) that is axially fitted into the main body (1) thus forming the seal.

[0021] The rotary element has a grip (3) for its operation and two opposing flaps (14) that by means of the interaction with the inner indentation (15) only allows the

turning in one direction and prevents it from reverse rotation.

[0022] The instructions for use are very simple. First a wire (16) of the appropriate size must be introduced into the upper side hole of the main body (5), then through the upper hole (11) that the rotary element (2) has for that purpose and finally it goes out through the opposing upper side hole (7) of the main body (1); a bowknot is made with the end of the wire (16) in order to go through the holes or rings of the object to be sealed, and then the wire (16) is introduced again into the lower side hole (8) of the main body (1), it goes through the rotary element (2) and goes out through the opposite hole (6) of the main body (1). When the grip of the rotary element (3) is turned, a bit of the wire (16) is caught in the bowknot and the object in question becomes perfectly sealed since the rotary element turns only in one direction and never in the opposite one.

[0023] The rotary element (2) has a protuberance (4) on his lower part which acts as a stopper when it gets lodged in the compartment (10) that the main body (1) has for this purpose. The mentioned protuberance (4) and the rotary element (2) are joined together by a weakening line that allows the separation of the parts when the rotary element (2) is removed from the main body (1). In that case, the protuberance (4) serves for evidence of the opening since it will remain loose but inaccessible inside the translucent capsule at the bottom of the main body.

[0024] The main body (1) may include a tag (13) or printing area placed tangently to the seal side. The printing on the tag (13) not necessarily coincides with the printing on the main body (1). The tag (13) may be attached to the main body (1) along a weakening line (17) which makes it easier to detach the tag (13) by pulling manually.

[0025] The seals object of the present invention may be presented in combs of different number of units, joined together with a small quantity of a material which makes them easy to separate manually.

Claims

1. Visual tamper evident security seal, made up of a main body (1) with an inner cylindrical cavity which has an indentation (15) in the perimeter and a rotary element (2) with a grip (3) for its operation, as well as two opposing flaps (14) that by means of the interaction with the inner indentation (15) only allow the turning on one direction and prevent it from turning on the opposite direction. The rotary element (2) has a protuberance (4) on its lower part which acts as a stopper when it gets lodged in the compartment (10) that the main body (1) has for this purpose. For the correct use of the seal it is necessary to introduce the end of a wire (16) into the upper hole of the main body (5), then through the rotary element (2) and

finally it goes out through the opposing hole (7) of the main body (1); the end of the wire (16) goes through the holes or rings of the object to be sealed, and then the wire (16) is introduced again into the lower side hole (8) of the main body (1), it goes through the lower hole of the rotary element (12) and goes out through the lower opposite hole (6) of the main body (1) in such a way that when the grip of the rotary element (3) is turned, a bit of the wire (16) is caught, **characterized in that** the protuberance (4) that is attached to the rotary element (2) by means of a weakening line that allows the separation of the parts when the rotary element (2) is removed from the main body (1). **In that** case, the protuberance (4) serves for evidence of the opening since it will remain loose but inaccessible inside the translucent capsule (9) at the bottom of the main body (1).

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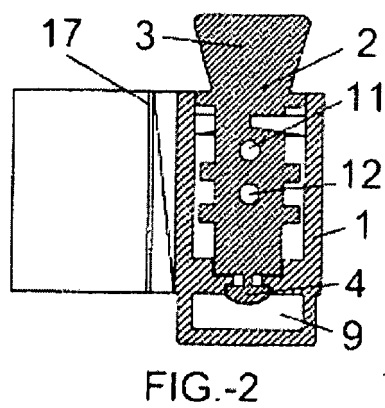
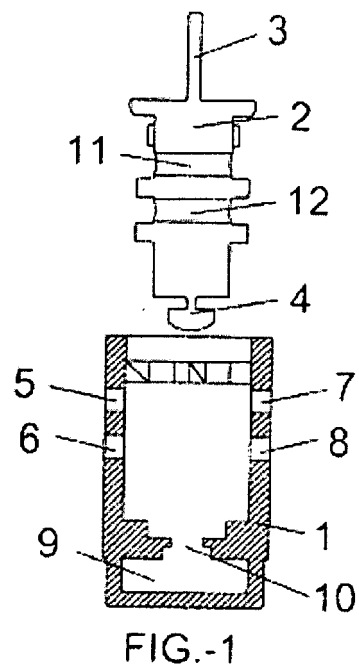
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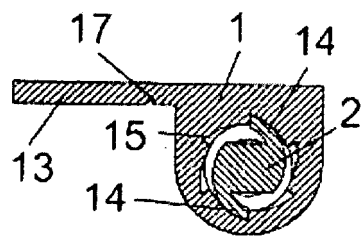


FIG.-3

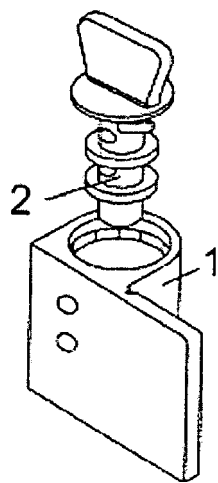


FIG.-4

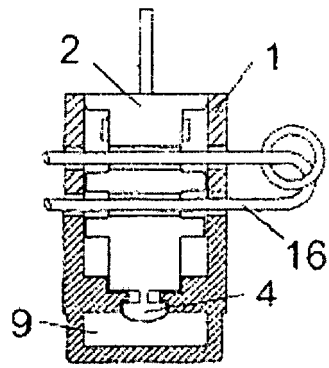


FIG.-5

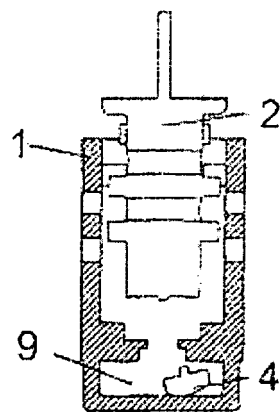


FIG.-6



EUROPEAN SEARCH REPORT

Application Number
EP 10 38 0061

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	ES 1 063 639 U (ROYAL PACK EMBALAJES DE SEGURIDAD [ES]) 16 November 2006 (2006-11-16) * column 4, line 6 - line 50 * * figures 1-6 *	1	INV. G09F3/03
A	US 5 402 958 A (MAHANEY JOHN C [US]) 4 April 1995 (1995-04-04) * column 4, line 47 - line 63 * * figure 8 *	1	
A	WO 01/86615 A2 (ITW NEW ZEALAND LTD [NZ]; WRIGLEY ANDREW NICHOLSON [NZ]) 15 November 2001 (2001-11-15) * page 14, line 5 - line 12 * * page 14, line 17 - line 24 * * figure 5 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			G09F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 August 2010	Examiner Lechanteux, Alice
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	

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EPO FORM 1503 03/02 (P04C01)

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

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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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24-08-2010

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