

TAMPER EVIDENT DEVICE WITH AN IMPROVED COVER AND FRANGIBLE SEAL**Technical Field**

The present invention broadly relates to a tamper evident device. In particular, this invention is concerned with an improved cover designed to form part of a tamper evident device
5 suitable for use with a slide fastener. This invention also relates to an improved frangible seal adapted to co-operate with the improved cover.

Background of the Invention

As an example of a prior art security device, reference is made PCT patent application PCT/AU2007/000929. This prior art security device is designed to cover the slider of slide
10 fastener to prevent access to it. The security device also includes a frangible locking element generally referred to as a seal to indicate tampering.

It is generally desired in the security device industry to provide a tamper evident device which offers a higher level of security and is less susceptible to being prised than that referred to and described above.

15 It is therefore the object of the present invention to provide a security device with an improved cover and corresponding frangible seal which may satisfy the above desire or which may at least provide the public with a useful alternative.

Summary of the Invention

Accordingly, in a first aspect, the present invention provides a security device for a container
20 closable by a slide fastener having a slider, the security device including:
a lower part adapted for attachment to the container;
means for attaching the security device to the slider, directly or indirectly;
an upper part for retaining the attaching means;
receiving means for receiving a frangible seal having a locking member and preventing
25 retraction of the frangible seal except by fracture thereof; and
means to limit access to the attaching means and the receiving means;
wherein the access limiting means includes a locking element adapted to engage the locking member of the frangible seal when the frangible seal is received in the receiving means so as

to further prevent retraction of the frangible seal.

In a preferred embodiment, the access limiting means takes the form of a cover to the security device. It is preferred that the locking element is a protrusion extending downwardly from the cover. Preferably, the protrusion is in the form of a wedge with a bevel and a first
5 locking surface.

The frangible seal is preferred to include a main body, a pair of flexible legs extending from the main body and joined by the locking member which provides an engaging surface and a second locking surface. Preferably, the engaging surface faces one direction whereas the second locking surface faces another direction. More preferably, the engaging surface is in
10 the form of a ramp. Even more preferably, as the frangible seal is being inserted into the receiving means, the ramp of the frangible seal urges against the bevel of the cover thereby facilitating the pair of legs to flex downward. Even more preferably, once the frangible seal is fully inserted into the receiving means, the pair of legs is capable of flexing back into its original position resulting in the first locking surface abutting the second locking surface. As
15 such, further prevention of retraction of the frangible seal is achieved.

Preferably, each leg of the frangible seal includes an inclined barb.

In a preferred embodiment, the cover includes a slot through which the frangible seal is inserted to be received by the receiving means. Preferably, the slot is partially defined by a ledge adapted to stop the main body of the frangible seal from entering the slot. More
20 preferably, the ledge includes a discontinuation configured to enable non-interference of the inclined barbs as the legs enter the slots.

Preferably, the cover also includes impeding means adapted to prevent insertion of unauthorised or incompatible seals into the slot. More preferably, the impeding means include one or more primary obstacles located at or near the middle of the entrance to the
25 slot. Even more preferably, the impeding means include one or more secondary obstacles located at or near the sides of the entrance to the slot.

It is preferred that at least one of the legs of the frangible seal includes a groove configured to accommodate the primary obstacle as the leg enters the slot. Preferably, the main body of

the frangible seal includes at least one recess adapted to accommodate the secondary obstacle as frangible seal engages the cover.

In a preferred embodiment, the slider includes a loop or aperture to which the attaching means may be attached. The attaching means are preferred to include a U-shaped clasp
5 having a pair of arms each ending with an annular ring. The cover preferably includes a pair of extensions with corresponding annular rings. The security device is preferred to include a pin adapted to pass through and be received in the aligned annular rings of the U-shaped clasp and cover extensions so as to achieve attachment of the cover to the slider.

The cover is preferred to include a pair of notches for receiving the respective arms of the U-
10 shaped clasp so as to allow the slider (or zip pull) to rotate as desired.

Accordingly, in a second aspect, the present invention provides a cover for a security device for a container closable by a slide fastener having a slider, the security device including:
a lower part adapted for attachment to the container;
means for attaching the security device to the slider, directly or indirectly;
15 an upper part for retaining the attaching means; and
receiving means for receiving a frangible seal having a locking member and preventing retraction of the frangible seal except by fracture thereof;
wherein the cover is adapted to limit access to the attaching means and the receiving means, and includes a locking element adapted to engage the locking member of the frangible seal
20 when the frangible seal is received in the receiving means so as to further preventing retraction of the frangible seal.

Preferably, the upper part defines a chamber and is attached to the lower part, the cover being adapted to cover the chamber to limit access therein.

Accordingly, in a third aspect, the present invention provides a frangible seal for a security
25 device for a container closable by a slide fastener having a slider, the security device including:
a lower part adapted for attachment to the container;
means for attaching the security device to the slider, directly or indirectly;
an upper part for retaining the attaching means;

receiving means for receiving the frangible seal and preventing retraction of the frangible seal except by fracture thereof; and

means to limit access to the attaching means and the receiving means;

wherein the limit accessing means has a locking element whereas the frangible seal has a

5 locking member, the locking element being adapted to engage the locking member when the frangible seal is received in the receiving means so as to further preventing retraction of the frangible seal.

Brief Description of the Drawings

The invention will now be described in connection with a certain non-limiting embodiment
10 thereof in connection with the following drawings, in which:

Figure 1 is an exploded perspective view of an embodiment of a security device of the first aspect of the invention;

Figure 2 is an perspective view of the assembled security device of Figure 1;

Figure 3 is a plan view of the embodiment;

15 Figure 4 is a cross-sectional view taken along the line A-A in Figure 3;

Figure 5 is a cross-sectional view taken along the line C-C in Figure 3;

Figure 6 is a plan view from bottom of an embodiment of a cover of the second aspect of the invention;

Figure 7 is a cross-sectional view taken along the line B-B in Figure 6;

20 Figure 8 is a bottom perspective view of the cover of Figure 6;

Figure 9 is a top perspective view of the cover of Figure 6;

Figure 10 is a front elevation of the cover of Figure 6;

Figure 11 is a bottom perspective view of an embodiment of a frangible seal of the third aspect of the invention;

25 Figure 12 is a top perspective view of the frangible seal of Figure 11;

Figure 13 is a plan view of the top of the frangible seal of Figure 11;

Figure 14 is a side view of the frangible seal of Figure 11;

Figure 15 is a plan view of the bottom of the frangible seal of Figure 11;

Figure 16 is an exploded perspective view showing the cover of Figure 6 together with a clasp and a slider;

5 Figure 17 is a perspective view of the cover of Figure 6 connected to the slider via the clasp;

Figure 18 is a plan view of the cover, slider and clasp of Figure 17; and

Figure 19 is a side view of the cover, slider and clasp of Figure 17.

Detailed Description of the Drawings

10 It should be noted that some components of the security device 10 of the present invention such as the upper and lower parts are identical to those described in international patent application No. PCT/AU2007/000929, the contents of which are imported herein by reference.

Referring to Figures 1 to 5, a security device 10 for a container (not shown) closable by a slide
15 fastener (not shown) having a slider 16 (see Figures 16 to 19) is shown. The security device 10 has a lower part 12 for attachment to the container and attaching means 14 for attachment of the security device 10 to the slider 16.

Security device 10 also includes upper part in the form of a chamber base 20 including chamber 22, in which is located receiving means in the form of a passageway 24 for receiving
20 a frangible seal 26. The chamber base 20 retains the attaching means which is in the form of a U-shaped clasp 14. With reference to Figures 1 to 5, but in particular to Figure 4, it can be seen that the chamber 22 of the present invention is also covered by an access limiting means in the form of a cover 28. This cover 28 however has a substantially different design and configuration than that described in the abovementioned PCT document. Also, the
25 frangible seal 26 to be received by the passageway 24 has a substantially different design and configuration from that disclosed in the same PCT document.

Turning to Figures 6 to 8, much like the security device disclosed in PCT/AU2007/000929, the

fundamental functions of the cover 28 are to limit access to the U-shaped clasp 14 and the passageway 24. To enhance the integrity of the security device 10, the cover 28 of the present invention has a locking element being a protrusion 30 extending downwardly. As best shown in Figure 7 & 8, the protrusion 30 is in the form of a wedge with a bevel 32 and a
5 flat locking surface 34.

Referring to Figures 11 to 15, the frangible seal 26 of the present invention has a main body 36 and a pair of flexible legs 38 & 40 extending from the main body 36. Each leg 38, 40 of the frangible seal 26 has an inclined barb 44, 46. The legs 38 & 40 are joined by a locking member 42. The locking member 42 provides an engaging surface in the form of a ramp 48 and a
10 second locking surface 50. As best shown in Figures 11, 12, 13 & 15, the ramp 48 faces one direction whereas the second locking surface 50 faces another direction. As the frangible seal 26 is being inserted into the passageway 24, the ramp 48 of the frangible seal 26 urges against the bevel 32 of the cover 28 thereby resulting in the pair of legs 38 & 40 to flex downward to allow the frangible seal to advance.

15 Once the frangible seal 26 is fully inserted into the passageway 24, the pair of legs 38 & 40 is cleared of the locking member 42 being capable of flexing back into its original position resulting in the first locking surface 32 abutting the second locking surface 50. As such, the seal 26 is interlocked with the cover 28 and hence further prevention of retraction of the frangible seal 26 is achieved. This is significant as this design enhances secured locking of the
20 frangible seal 26 with two mechanisms.

Referring to Figures 9 and 10, the cover 28 has a slot 52 through which the frangible seal 26 is inserted to be received by the passageway 24. The slot 52 is partially defined by two ledges 54 & 56 configured to stop the main body 36 of the frangible seal 28 from entering the slot 52. Provided between the ledges 54 & 56 is a gap 58 configured to enable non-interference
25 of the inclined barbs 44, 46 as the legs 38 & 40 enter the slot 52.

As best shown in Figures 9 and 10, the cover 28 also includes impeding means configured to prevent insertion of unauthorised or incompatible seals (such as the ones for the security device disclosed in PCT/AU2007/000929) into the slot 52. The impeding means take the form of primary obstacles being ribs 60 located at or near the middle of the entrance 62 to the slot

52. The impeding means also include secondary obstacles in the form of large ribs 64 located at or near the sides of the entrance 62 to the slot 52.

As best shown in Figures 11 and 15, each of the legs 38 & 40 of the frangible seal 26 has a groove 66 configured to accommodate the primary obstacle 64 as the leg 38, 40 enters the slot 52. Once the seal 26 is fully inserted, the ribs 60 are nested in the respective recesses 84 & 86 provided in the main body 36 of the seal 26, as illustrated in Figure 5. The main body 36 of the frangible seal 26 has a pair of recesses 68 provided to accommodate the secondary obstacles which are in the form of large ribs 64 as frangible seal 26 engages the cover 28.

Turning now to Figures 16 to 19, the slider 16 has a loop or aperture 70 to which the attachment means being the U-shaped clasp 14 is attached. The U-shaped clasp 14 has a pair of arms 14 each ending with an annular ring 74. The cover 28 has a pair of extensions 76 with corresponding annular rings 78. A pin 80 (see Figure 16) is provided to pass through and be received in each of the aligned annular rings 74 & 78 of the U-shaped clasp 14 and cover extensions 76 so as to achieve attachment of the cover 28 to the slider 16. The configuration of the U-shaped clasp 14 offers the advantage of being able to be passed through and hooked around the loop or aperture 70 of the slider 16 during assembly. This is significant as the bridge 82 of the slider is configured such that a substantially closed loop is created by the bridge 82 for a high level of security. It is therefore important for the clasp 14 to have an open end to facilitate installation. Fastening between the clasp 14 and pin 80 is achieved via interference or friction fit.

As best shown in Figures 6 and 16, the cover 28 has a pair of notches 78 for receiving the respective arms 72 of the U-shaped clasp 14 so as to allow the slider 16 (or zip pull) to rotate as desired.

Now that a preferred embodiment of the present invention has been described in some detail, it will be apparent to a skilled person in the art that the security device, cover and frangible seal of the present invention may offer at least the following advantages:

1. it enables enhanced security with two locking mechanisms preventing the seal from being removed without breaking the main body indicating tampering;

2. the cover is retrofittable into old security devices to replace the original or a pre-existing cover which enables use of most of the original parts and hence saves cost; and

3. it is capable of preventing use of unauthorised and incompatible old seals.

5 Those skilled in the art will appreciate that the invention described herein is susceptible to variations and modifications other than those specifically described. All such variations and modifications are to be considered within the scope and spirit of the present invention the nature of which is to be determined from the foregoing description.

Claims

1. A security device for a container closable by a slide fastener having a slider, the security device including:
 - a lower part adapted for attachment to the container;
 - 5 means for attaching the security device to the slider, directly or indirectly;
 - an upper part for retaining the attaching means;
 - receiving means for receiving a frangible seal having a locking member and preventing retraction of the frangible seal except by fracture thereof; and
 - a cover to limit access to the attaching means and the receiving means;
 - 10 wherein the cover includes a protrusion extending downwardly from the cover, the protrusion being adapted to engage the locking member of the frangible seal when the frangible seal is received in the receiving means so as to further prevent retraction of the frangible seal.
- 15 2. The security device of claim 1, wherein the protrusion is in the form of a wedge with a bevel and a first locking surface.
3. The security device of any one of the preceding claims, wherein the frangible seal includes a main body, a pair of flexible legs extending from the main body and
20 joined by the locking member which provides an engaging surface and a second locking surface.
4. The security device of claim 3, wherein the engaging surface faces one direction whereas the second locking surface faces another direction.
- 25 5. The security device of either claim 3 or 4, wherein the engaging surface is in the form of a ramp.

6. The security device of any one of claims 2 to 5, wherein as the frangible seal is being inserted into the receiving means, the ramp of the frangible seal urges against the bevel of the cover thereby facilitating the pair of legs to flex downward.
- 5 7. The security device of claim 6, wherein once the frangible seal is fully inserted into the receiving means, the pair of legs is capable of flexing back into its original position resulting in the first locking surface abutting the second locking surface.
- 10 8. The security device of any one of the preceding claims, wherein each leg of the frangible seal includes an inclined barb.
- 15 9. The security device of any one of the preceding claims, wherein the cover includes a slot through which the frangible seal is inserted to be received by the receiving means.
10. The security device of claim 9, wherein the slot is partially defined by a ledge adapted to stop the main body of the frangible seal from entering the slot.
- 20 11. The security device of claim 10, wherein the ledge includes a discontinuation configured to enable non-interference of the inclined barbs as the legs enter the slots.
- 25 12. The security device of any of claims 9 to 11, wherein the cover also includes impeding means adapted to prevent insertion of unauthorised or incompatible seals into the slot.
13. The security device of claim 12, wherein the impeding means include one or more

primary obstacles located at or near the middle of the entrance to the slot.

5 14. The security device of either claim 12 or 13, wherein the impeding means include one or more secondary obstacles located at or near the sides of the entrance to the slot.

10 15. The security device of any one of claims 9 to 14, wherein at least one of the legs of the frangible seal includes a groove configured to accommodate the primary obstacle as the leg enters the slot.

16. The security device of either claim 14 or 15, wherein the main body of the frangible seal includes at least one recess adapted to accommodate the secondary obstacle as the frangible seal engages the cover.

15 17. The security device of any one of the preceding claims, wherein the slider includes a loop or aperture to which the attachment means is attached.

20 18. The security device of any one of the preceding claims, wherein the attaching means includes a U-shaped clasp having a pair of arms each ending with an annular ring.

19. The security device of any one of the preceding claims, wherein the cover includes a pair of extensions with corresponding annular rings.

25 20. The security device of either claim 18 or 19, including a pin adapted to pass through and be received in the aligned annular rings of the U-shaped clasp and cover extensions so as to achieve attachment of the cover to the slider.

21. The security device of any one of claims 18 to 20, wherein the cover includes a pair of notches for receiving the respective arms of the U-shaped clasp so as to allow the slider (or zip pull) to rotate as desired.

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22. A cover for a security device for a container closable by a slide fastener having a slider, the security device including:

a lower part adapted for attachment to the container;

means for attaching the security device to the slider, directly or indirectly;

10 an upper part for retaining the attaching means; and

receiving means for receiving a frangible seal having a locking member and preventing retraction of the frangible seal except by fracture thereof;

wherein the cover is adapted to limit access to the attaching means and the receiving means, and includes a protrusion extending downwardly from the cover,

15 the protrusion being adapted to engage the locking member of the frangible seal when the frangible seal is received in the receiving means so as to further preventing retraction of the frangible seal.

23. A frangible seal for a security device for a container closable by a slide fastener having a slider, the security device including:

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a lower part adapted for attachment to the container;

means for attaching the security device to the slider, directly or indirectly;

an upper part for retaining the attaching means;

receiving means for receiving the frangible seal and preventing retraction of the frangible seal except by fracture thereof; and

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a cover to limit access to the attaching means and the receiving means;

wherein the cover has a protrusion extending downwardly from the cover whereas the frangible seal has a locking member, the protrusion being adapted to engage the locking member when the frangible seal is received in the receiving means so as to further preventing retraction of the frangible seal.

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