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(54) **TAMPER EVIDENT SEAL**

(57) The invention relates to a tamper evident seal comprising:
- an elastic base layer with an attachment part having a deformation zone and a pull tab;
- a pressure sensitive adhesive layer arranged on the attachment part for attaching the tamper evident seal to a surface of an object,
wherein at the deformation zone the local peel strength between the pressure sensitive adhesive layer and the surface of the object is larger than the local yield strength of the deformation zone of the elastic base layer times the local thickness of the deformation zone.

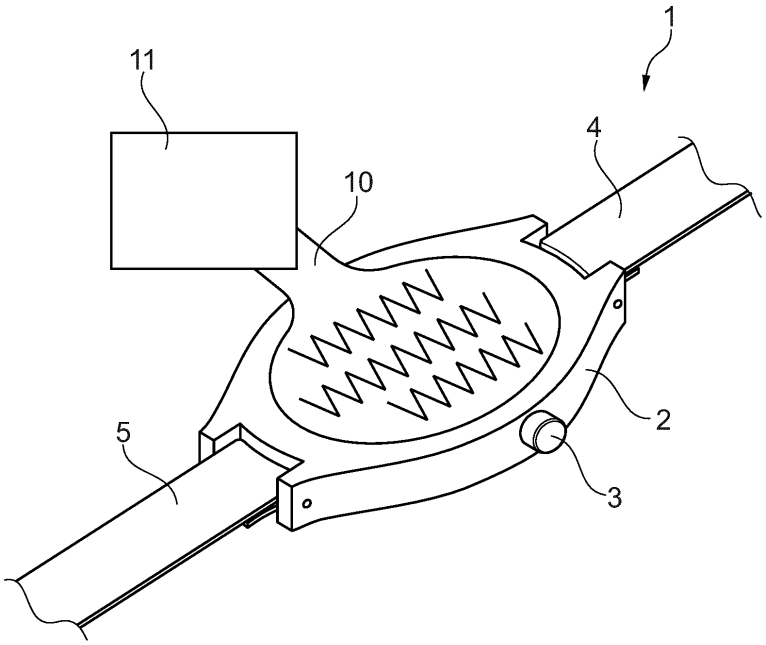


Fig. 1

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## Description

**[0001]** The invention relates to a tamper evident seal to ensure that a bought and returned article is not extensively used.

**[0002]** When articles are bought online, a customer is typically allowed to return the article within a specified period, for example 14 days. This allows the customer to try out the article and decide whether the customer would like to keep the product.

**[0003]** Some customers take advantage of this return policy and order products to wear for a party and then return the product after the party as if they did not like the product. Such products could then already have such traces of use, that the product can no longer be resold to another customer.

**[0004]** In order to prevent other use of a product than strictly examining the product or trying the product on, one could attach large labels to the products, which prevent that such a product is used in public, such as on a party.

**[0005]** However, some products are not suited to attach labels to without having a negative impact on wear comfort. For example, if one would arranged a label on shoes, then the label could impair a customer walking on the shoes. On other products, such as a watch, it is virtually impossible to attach a label to.

**[0006]** It is further know to provide sticker like tamper evident seals which leave a print behind after removal. Such tamper evident seals are typically useful for detecting whether a packaging is opened, but no customer would like to have a print on a product, which the customer would like to keep.

**[0007]** If the sticker like tamper evident seal is made such that it does not leave any print or remnants than such a sticker could easily be removed by a customer and then be replaced when the product is return after all.

**[0008]** It is an object of the invention to reduce or even remove the above mentioned disadvantages.

**[0009]** This object is achieved according to the invention with a tamper evident seal comprising:

- an elastic base layer with an attachment part having a deformation zone and a pull tab;
- a pressure sensitive adhesive layer arranged on the attachment part for attaching the tamper evident seal to a surface of an object,

wherein at the deformation zone the local peel strength between the pressure sensitive adhesive layer and the surface of the object is larger than the local yield strength of the deformation zone of the elastic base layer times the local thickness of the deformation zone.

**[0010]** When the tamper evident seal is removed from a surface of an article, one has to exert a force on the tamper evident seal to overcome the peel strength, which is the average load per unit width of bond line required to separate the adhesive layer with the elastic base layer from the surface of an article. The peel strength is typically measured at an angle of 90°.

**[0011]** This force to overcome the peel strength is transferred by the user onto the elastic base layer via the pull tab. By having this required force to remove the tamper evident seal from a surface being larger than the force, which causes local deformation at the deformation zone, because the local yield strength is exceeded, it is ensured that after removal the tamper evident seal is permanently deformed. The tamper evident seal can no longer be replaced without clearly being noticeable due to the deformation.

**[0012]** As a pressure sensitive adhesive layer is used, there is no chemical bonding of the adhesive with the surface of the product, such that the surface will not be damaged by the tamper evident seal.

**[0013]** In a preferred embodiment of the tamper evident seal according to the invention the peel strength between the pressure sensitive adhesive layer and the surface of the object is smaller than the peel strength between the pressure sensitive adhesive layer and the elastic base layer.

**[0014]** This ensures that after removal of the tamper evident seal from a surface no remnants of the adhesive layer are left behind on the surface.

**[0015]** In a further preferred embodiment of the tamper evident seal according to the invention at the deformation zone the local peel strength between the pressure sensitive adhesive layer and the surface of the object is smaller than the local tensile strength of the deformation zone of the elastic base layer times the local thickness of the deformation zone.

**[0016]** In this embodiment it is ensured that the elastic base layer does not tear when the tamper evident seal is removed from the surface under normal conditions. However, if the tamper evident seal is abused, for example by trying to remove the seal at high speed, there is still a possibility that a part will tear of.

**[0017]** In yet another preferred embodiment of the tamper evident seal according to the invention the deformation zone comprises a pattern of cuts, for example parallel zigzag cuts, extending through the thickness of the deformation zone.

**[0018]** When the attachment part is adhered to a surface, the cuts will be almost invisible, as the elastic base layer is not yet deformed. However, after removal of the tamper evident seal, the parts adjacent the cuts will be deformed. This increases the visibility of the fact that the tamper evident seal has been removed from a surface.

**[0019]** In yet another embodiment of the tamper evident seal according to the invention the elastic base layer is of a polyvinyl chloride with a suitable plasticizer. Preferably, a translucent or transparent material is used, such that the view on the product to which the tamper evident seal is adhered is minimally impaired.

**[0020]** In still another embodiment of the tamper evident seal according to the invention a label is attached to the pull tab, which label has a printable surface for

printing instructions or a logo. The label ensures that the tamper evident seal is clearly visible for the customer and provides also a warning to be careful with the product.

**[0021]** The invention also relates to a combination of a watch and a tamper evident seal according to the invention, wherein the watch comprises a case with a face side and a back side, wherein the pressure sensitive adhesive layer adheres the attachment part of the tamper evident seal to the back side of the case of the watch and wherein the pull tab protrudes freely away from the case of the watch.

**[0022]** These and other features of the invention will be elucidated in conjunction with the accompanying drawings.

**[0023]** Figure 1 shows a perspective view of an embodiment of a combination according to the invention.

**[0024]** Figures 2A and 2B show the embodiment of figure 1 in two steps of removal of the tamper evident seal according to the invention.

**[0025]** Figures 3A and 3B show the tamper evident seal in a original state and a deformed state.

**[0026]** Figure 1 shows a combination 1 according to the invention. The combination has a watch with a case 2, a crown 3 and straps 4, 5. A tamper evident seal 10 with a label 11 is adhered to the back of the case 2.

**[0027]** Figure 2A shows the combination 1 in side view. The tamper evident seal 10 has an elastic base layer with an attachment part 12 and a pull tab 13. The label 11 is arranged to the pull tab 13.

**[0028]** A pressure sensitive adhesive layer 14 is arranged on the attachment part 12 with which the tamper evident seal 10 is adhered to the back of the case 2.

**[0029]** Figure 2B shows the state in which the tamper evident seal 10 is partially removed from the back of the case 2 by a pulling force F exerted on the pull tab 13. With the force F the peel strength of the adhesive layer 14 is overcome, but at the same time the yield strength of the elastic base layer is exceeded such that the deformation zone 15 of the attachment part 12 is deformed.

**[0030]** Figure 3A shows the tamper evident seal 10 in undisturbed state. The attachment part 12 has a number of zigzag cuts 16, 17, 18, which are part of the deformation zone 15 of the attachment part 12.

**[0031]** Figure 3B shows the tamper evident seal 10 after it has been removed by a pulling force from a surface, such as the back of the case 2. Due to the exceeding of the yield strength of the elastic base layer 12, the cuts 16, 17, 18 are no longer closed, but are opened up, such that it is absolutely clear that the tamper evident seal 10 has been removed from a surface.

## Claims

1. Tamper evident seal comprising:

   - an elastic base layer with an attachment part having a deformation zone and a pull tab;
   - a pressure sensitive adhesive layer arranged on the attachment part for attaching the tamper evident seal to a surface of an object,

   wherein at the deformation zone the local peel strength between the pressure sensitive adhesive layer and the surface of the object is larger than the local yield strength of the deformation zone of the elastic base layer times the local thickness of the deformation zone.

2. Tamper evident seal according to claim 1, wherein the peel strength between the pressure sensitive adhesive layer and the surface of the object is smaller than the peel strength between the pressure sensitive adhesive layer and the elastic base layer.

3. Tamper evident seal according to claim 1 or 2, wherein at the deformation zone the local peel strength between the pressure sensitive adhesive layer and the surface of the object is smaller than the local tensile strength of the deformation zone of the elastic base layer times the local thickness of the deformation zone.

4. Tamper evident seal according to any of the preceding claims, wherein the deformation zone comprises a pattern of cuts, for example parallel zigzag cuts, extending through the thickness of the deformation zone.

5. Tamper evident seal according to any of the preceding claims, wherein the elastic base layer is of a polyvinyl chloride with a suitable plasticizer.

6. Tamper evident seal according to any of the preceding claims, wherein a label is attached to the pull tab, which label has a printable surface for printing instructions or a logo.

7. Combination of a watch and a tamper evident seal according to any of the preceding claims, wherein the watch comprises a case with a face side and a back side, wherein the pressure sensitive adhesive layer adheres the attachment part of the tamper evident seal to the back side of the case of the watch and wherein the pull tab protrudes freely away from the case of the watch.

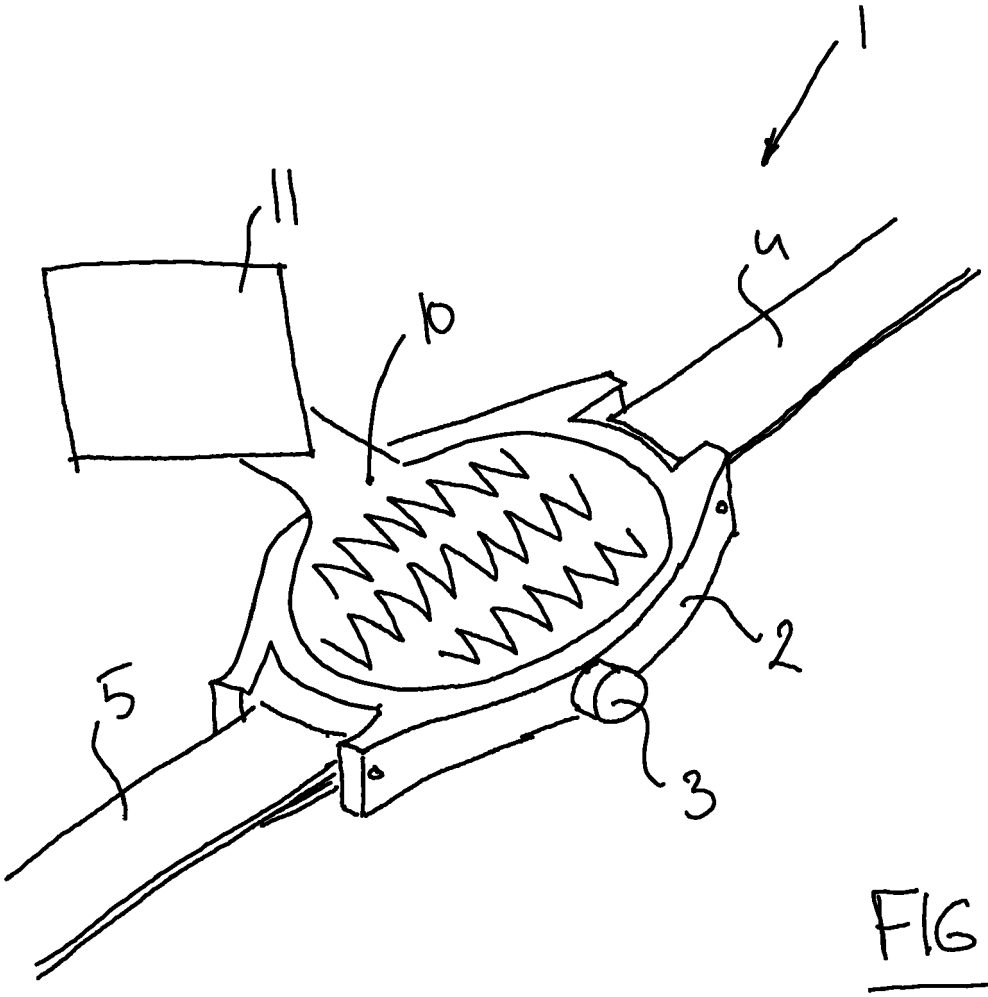


FIG1

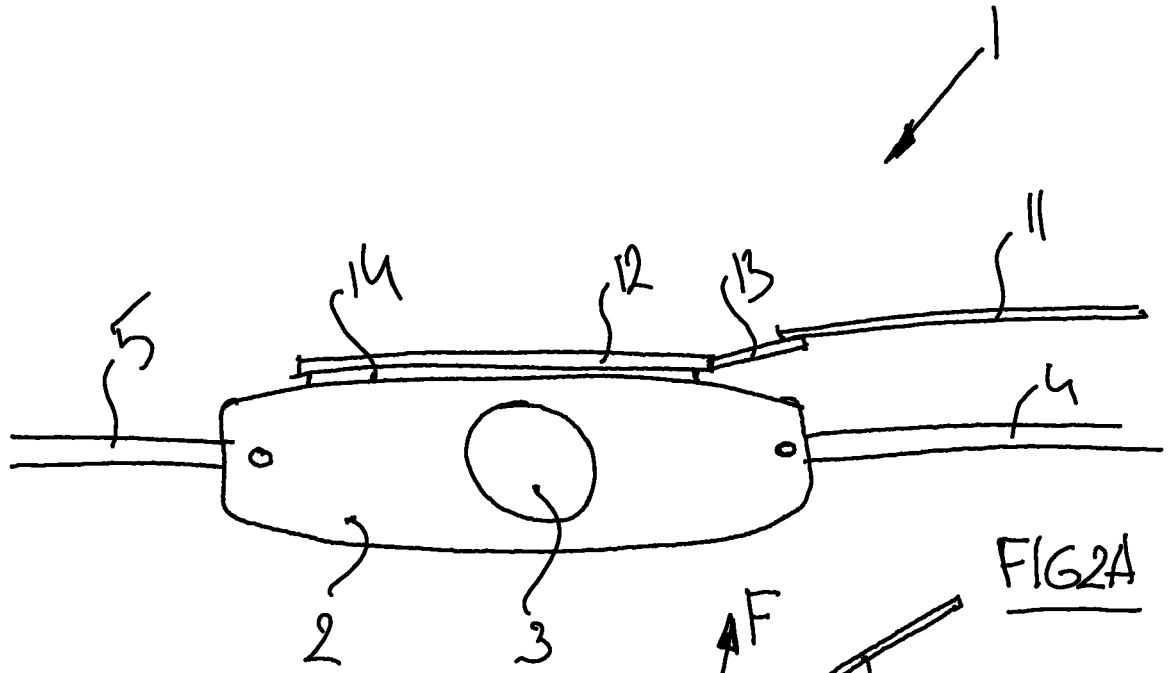


FIG2A

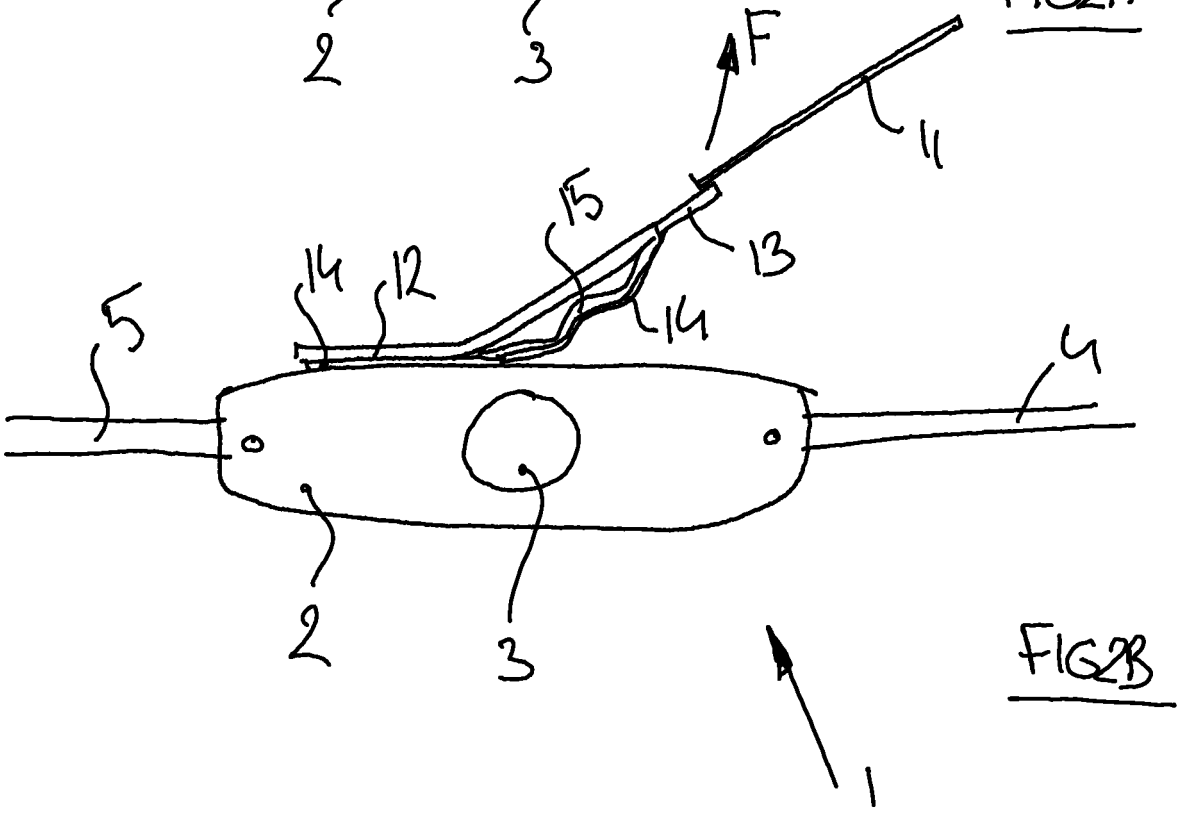


FIG2B

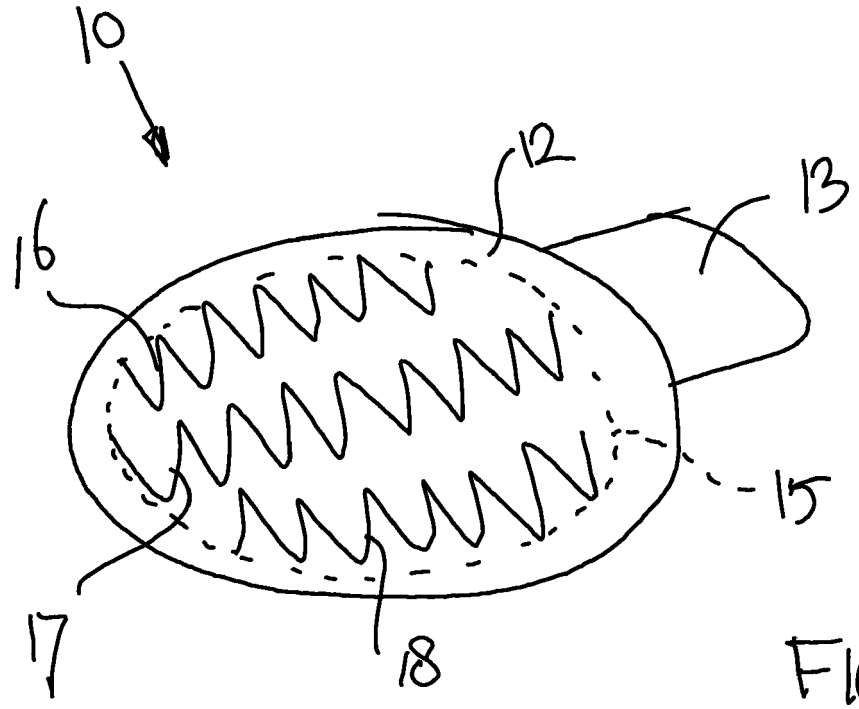


FIG3A

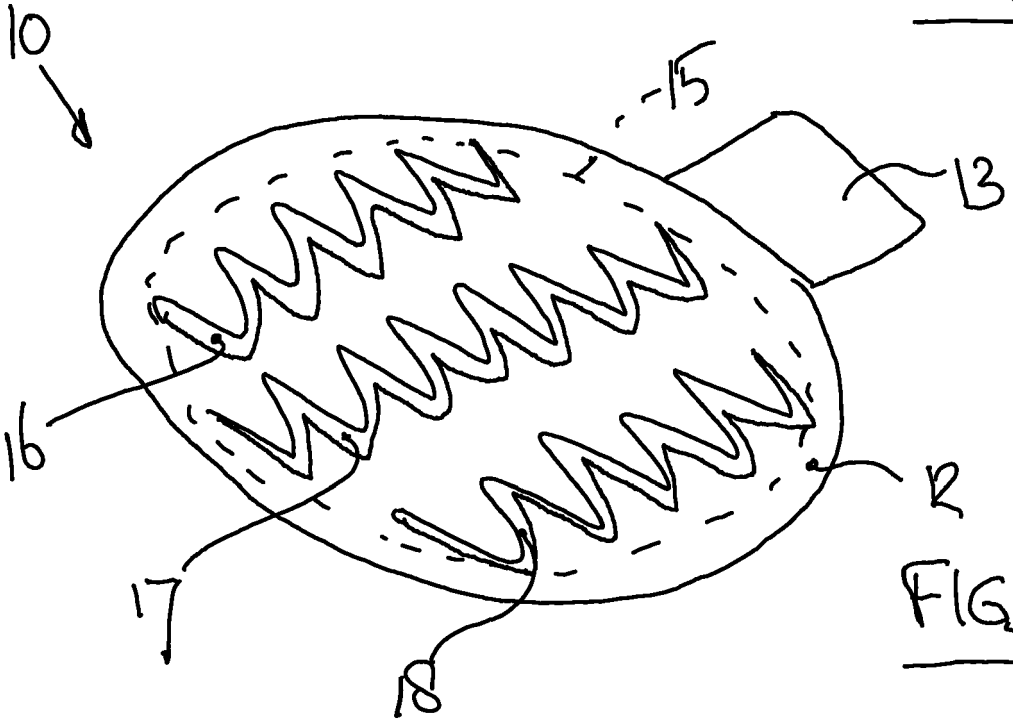


FIG3B

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# EUROPEAN SEARCH REPORT

Application Number
EP 23 17 2961

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|---|---|---|---|
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The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 7 November 2023 | Pantoja Conde, Ana |

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