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(54) **Buckle**

(57) Buckle (10) adapted to be crossed by a strap (12) or other similar band, and comprising a main structure (14) having a substantially rectangular shape and a plate (16) having a rectangular shape. The plate (16) is movable relative to the main structure (14) so that according to the movement of the strap (12), the plate (16) can approach a portion of the main structure (14) and lock the strap (12) in place.

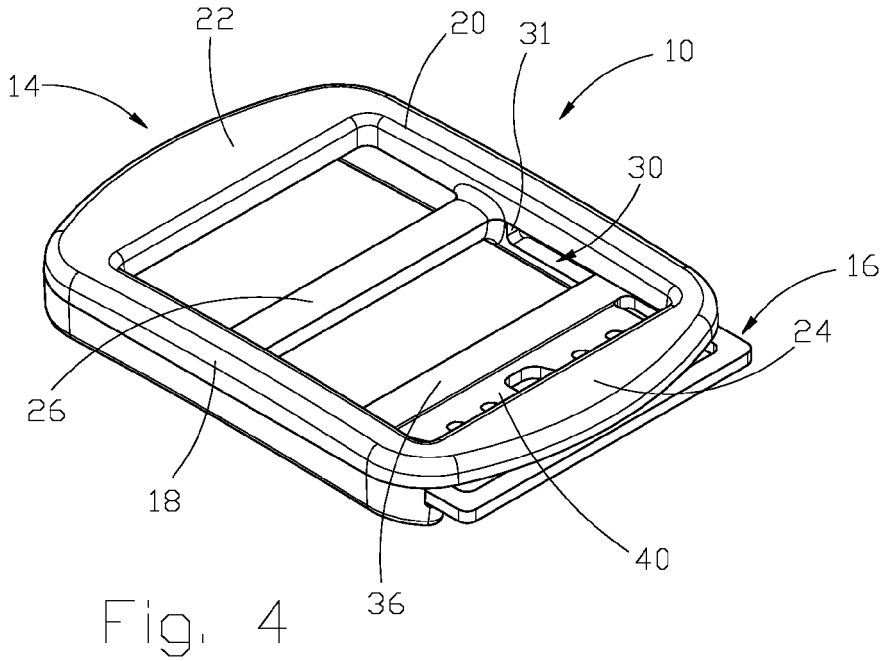


Fig. 4

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## Description

**[0001]** The present invention refers, in general, to a buckle. More particularly, it is a buckle which comprises a movable plate which improves the grip of the buckle on a belt, strap or band to be inserted in the buckle.

**[0002]** As is known, there exist buckles which have a rectangular structure which is provided with a transversal body in the middle. An end of the belt or an end of a strap or band is fixed on the transversal body while the other end remains free and is inserted in the structure of the buckle and passes through the buckle according to the known way and overhangs the transversal body. A buckle of this type does not allow to fix the free end in a stable manner so that the free end could slide for the absence of a firm grip of the buckle on the free end.

**[0003]** In order to obtain a stable fixing of the free end of a belt, strap or other band on a buckle, buckles have been produced to which one or more hooks or prongs are constrained. Such hooks or prongs are to fix the belt or strap in position because the belt or strap is provided with holes and the hooks or prongs are inserted in the holes of the belt or strap after the latter has been inserted in the buckle.

**[0004]** However, buckles comprising one or more hooks are more complex to be carried out since they comprise more elements which are to be produced and assembled in a stable way in order to guarantee a movement of rotation of the hook in relation to the buckle.

**[0005]** Besides, the presence of the hook, which is rather unaesthetic, involves the presence of holes in the belt or strap.

**[0006]** The aim and function of the present invention is to carry out a buckle which overcomes the inconveniences of the prior art and which allows a firm coupling with the belt, strap or other band to be fixed.

**[0007]** A further aim of the present invention is to supply a buckle which is simple to be produced and in which its components cooperate with each other as well as with the belt to be fixed.

**[0008]** Another aim of the invention is to offer a buckle which is pleasing to see and does not involve the presence of holes or the like in the belt to be fixed on said buckle.

**[0009]** The above aims and further ones are reached with a buckle adapted to be crossed by a strap, a belt or other band and comprising a main structure comprising four perimetric profiles and a transverse profile, more precisely a first lateral profile, a second lateral profile which is parallel to the first lateral profile, a rear profile which connects an end of the first lateral profile to an end of the second lateral, a front profile which connects the opposite end of the first lateral profile to the opposite end of the second lateral profile, the rear profile and the front profile being parallel to each other, the transverse profile which connects the first lateral profile to the second lateral profile.

**[0010]** The buckle according to the invention is characterized by the fact that a first rectilinear seat and a second rectilinear seat are obtained in the inside of the first lateral profile and the second lateral profile, between the transverse profile and the front profile, respectively, that it comprises a rectangular plate in which a window is obtained so that the plate is formed by a first side and a second side, which sides are parallel to each other and are connected to each other at their ends by means of a third side and a fourth side, respectively.

**[0011]** In addition, the buckle is characterized by the fact that the first side of the plate and the second side of the plate are received in the first rectilinear seat and in the second rectilinear seat, respectively so that the plate can translate in respect to the main structure in which the plate is received, the fourth side being turned toward the front profile and the third side being turned toward the transverse profile.

**[0012]** This configuration allows that the free end of the strap can be engaged in the buckle by passing it under the front profile and passing it through the opening or window of the plate. In this way, when the strap is subjected to a traction directed toward the outside on the side of the front profile, the strap pushing against the fourth side of the plate provokes a translation of the plate which tightens the strap between the third side and the front profile. In this way, the strap is tightened between two elements of the buckle and is maintained in place.

**[0013]** Advantageously, the plate is movable between a first limit position and a second limit position; in the first limit position, the lateral ends of the third side beat against an end of the first rectilinear seat and against an end of the second rectilinear seat, respectively; in the second limit position, the third side of the plate is stopped adjacent to the front profile of the main structure. In this way, once the plate has been assembled with the main structure, the plate can not detach from the main structure and be lost.

**[0014]** Besides, the first rectilinear seat and the second rectilinear seat can be open on the opposite side in respect to the end of the first rectilinear seat and to the end of the second rectilinear seat against which the third side of the plate beats. In this way, the plate can enter the rectilinear seats in order to allow the assembly of the buckle.

**[0015]** Advantageously, the plate can comprise a bar which is integral to the third side and is turned toward the window. The bar is inclined in respect to the plane on which the first side, the second side, the third side and the fourth side of the plate rest. Once the strap has engaged the buckle, the strap passes through the plate, in particular between the bar and the front profile. When no strap passes through the buckle and with the presence of said inclined bar, the second limit position of the plate in respect to the main structure allows that said bar beats against the inner portion of the front profile of the main structure.

**[0016]** In addition, the inclination of the bar allows a better grip of the strap which is therefore tightened be-

tween the bar and the front profile of the main structure. Advantageously, the elastic properties of the bar allow the insertion of the plate in the rectilinear seats.

**[0017]** Besides, the bar can have an undulating or serrate profile, which improves the fixing of straps, belts or other bands made of slippery materials.

**[0018]** The buckle consisting of the main structure and the plate is made of a metal or a metal alloy such as Zn+Al+Mg alloy or brass, or a plastic material or a compound material.

**[0019]** Further features and details of the invention will be better understood from the following specification, given as a non-limiting example as well as from the accompanying drawing wherein:

Fig. 1 is an axonometric view of a buckle according to the invention, on which a strap is fixed;
Fig. 2 is an axonometric view of the buckle in Figure 1, in which the two parts forming the buckle are separated from each other;
Fig. 3 is an axonometric view of the buckle in Figure 1, in which the two parts are assembled together and are represented in a first position which allows a belt or strap to pass through the buckle; and
Fig. 4 is an axonometric view of the buckle in Figure 1, in which the two parts are assembled together and are represented in a second position which does not allow a belt or a strap to move in respect to the buckle.

**[0020]** With reference to the accompanying Figures, in particular Figure 1, number 10 denotes a buckle according to the invention, in which a strap 12 is engaged.

**[0021]** As represented in Figures 2, 3, 4, the buckle 10 comprises a main structure 14 and a plate 16 which is bound to the main structure 14 and is translated in respect to said structure.

**[0022]** The main structure 14 has an essentially rectangular shape and comprises a first lateral profile 18 and a second lateral profile 20 which are parallel to each other and are connected at their ends through a rear profile 22 and a front profile which are parallel to each other.

**[0023]** The first lateral profile 18 and the second lateral profile 20 are thicker than the rear profile 22 and the front profile 24.

**[0024]** Besides, the first lateral profile 18 and the second lateral profile 20 are connected to each other through a transversal profile 26 which is parallel to the rear profile 22 and the front profile 24.

**[0025]** In the inside of the first lateral profile 18 and the second lateral profile 20, between the transversal profile 26 and the front profile 24, a first rectilinear seat 28 and a second rectilinear seat 30 are obtained, respectively.

**[0026]** The plate 16 has a rectangular shape and an opening or window 39 is obtained centrally; in other words, the plate 16 has a first side 32 and a second side 34 which are shorter, parallel to each other and a fourth side 38 which are longer as it appears from Figure 2.

**[0027]** A serrate bar 40 is united integrally to the third side 36. Said bar is turned toward the window 39 and is slightly inclined upward in respect to the plane on which the four sides 32, 34, 36, 38 of the plate 16 rest.

**[0028]** During the utilization of the buckle 10, the main structure 14 and the plate 16 are assembled so that the short first side 32 of the plate and the short second side 34 of the plate are received in the first rectilinear seat 28 and the second rectilinear seat 30, respectively.

**[0029]** In this configuration, the plate 16 can translate between a first position as represented in Figure 3 and a second position as illustrated in Figure 4, the first rectilinear seat 28 and the second rectilinear seat 30 acting as guides for the plate 16. In the first position, the lateral ends of the third side 36 of the plate 16 beat against the edges 31 of the ends o the first rectilinear seat 28 and the second rectilinear seat 30. In Figures 2 and 4, number 31 denotes the beating edge of the second rectilinear seat 30 while the corresponding beating edge of the first rectilinear edge 28 is out of sight.

**[0030]** In the second position, the plate 16, advanced under the front profile 24, beats with the serrate bar 40 against the inside of the front profile 24, the bar 40 being slightly inclined upward.

**[0031]** In fact, in the assembling phase, the plate 16 which is made of a material having at least a minimum elastic property, runs in the first rectilinear seat 28 and in the second rectilinear seat 30 on forcing the bar 40 so that the bar 40 is inclined slightly downward to overcome the front profile 24. Once the bar 40 has overcome said front profile 24, the bar 40 recovers its upward inclination in order to prevent the plate 16 from disengaging from the main structure 14, once the plate 16 has been positioned in the first rectilinear seat 28 and the second rectilinear seat 30.

**[0032]** In the phase of utilization, the buckle 10 is fixed on an article of clothing or an end of a strap, a belt, or other band my means of the transversal profile 26 while the remaining parts of the buckle allow the free end of the strap to maintain its position.

**[0033]** As from Figure 1, the free end of the strap 12 is engaged in the buckle 10 by passing it under the front profile 24, over the transversal profile 26 and under the rear profile 22. In particular, the strap passes also through the window 39 of the plate 16.

**[0034]** In this way, when the strap 12 is subjected to a traction in the direction of the arrow F in Figure 1 - which traction, in the case of the known art, could cause the disengaging of the strap from the buckle -, the strap 12 itself provokes a translation of the plate 16 by pushing the fourth side 38 so that advantageously, the plate 16 tightens the strap between the bar 40 and the front profile 24. Accordingly, the plate 16 finds in a position close to the most extreme position, represented in Figure 4. In this way, the strap 12 is maintained in place in case of a traction to the outside.

**[0035]** On the contrary, in case the strap 12 is to be freed from the buckle 10, it is sufficient to push the strap 12 according to a direction opposite to the arrow F and

to disengage the other end of the strap from the buckle.

**[0036]** In the so-described embodiment, the bar 40 is serrated to improve the grip in case of a strap made of an imitation leather or other slippery materials. In case the strap or belt is made of genuine leather, the bar may have a linear profile which is already sufficient to obtain an efficient grip.

**[0037]** The buckle according to the invention may be produced in metal or metal alloys, such as Zn+Al+Mg alloy, brass or other alloys but it may be produced in a plastic material or a composite material.

**[0038]** Possible variants are to be considered as included in the scope of protection of the present invention; for instance, the transversal profile may be replaced with another element, integral to the main structure and adapted to fix the buckle to a belt or other fittings or garments.

**[0039]** Finally, the main structure of the buckle may have a different shape from the rectangular shape, such as a square shape, an oval shape or a circular shape.

## Claims

**1.** Buckle (10) adapted to be crossed by a strap (12) and comprising a main structure (14) comprising:

- a first lateral profile (18),
- a second lateral profile (20),
- a rear profile (22) which connects an end of the first lateral profile (18) to an end of the second lateral profile (20),
- a front profile (24) which connects the opposite end of the first lateral profile (18) to the opposite end of the second lateral profile (20),
- a transverse profile (26) which connects the first lateral profile (18) to the second lateral profile (20),

**characterized in that**

a first rectilinear seat (28) and a second rectilinear seat (30) are obtained in the inside of the first lateral profile (18) and the second lateral profile (20), between the transverse profile (26) and the front profile (24), respectively, that it comprises a rectangular plate (16) in which a window (39) is obtained so that the plate is formed by a first side (32) and a second side (34), which sides are parallel to each other and are connected to each other at their ends by means of a third side (36) and a fourth side (38), respectively, and that the first side (32) of the plate (16) and the second side (34) of the plate (16) are received in the first rectilinear seat (28) and in the second rectilinear seat (30), respectively so that the plate (16) can translate in respect to the main structure (14) in which the plate is received, the fourth side (38) being turned toward the front profile (24) and the third side (36) being turned toward the transverse profile (26).

**2.** Buckle (10) according to claim 1, wherein the plate (16) is movable between a first limit position in which the lateral ends of the third side (36) beat against an end of the first rectilinear seat (28) and an end (31) of the second rectilinear seat (30), respectively, and a second limit position in which the third side (36) is adjacent to the front profile (24) of the main structure (14).

**3.** Buckle (10) according to claim 2, wherein the first rectilinear seat (28) and the second rectilinear seat (30) are open on the opposite side in respect to the end of the first rectilinear seat (28) and to the end (31) of the second rectilinear seat (30) in order to receive the plate (16) in the assembling phase of the buckle (10).

**4.** Buckle (10) according to claim 3, wherein the plate (16) comprises a bar (40) which is integral to the third side (36) and is turned toward the window (39), said bar (40) being inclined in respect to the plane on which the first side (32), the second side (34), the third side (36) and the fourth side (38) rest so that the strap (12) can cross the buckle (10) between the bar (40) and the front profile (24).

**5.** Buckle (10) according to claim 4, wherein in the second limit position, the bar (40) beats against the inner portion of the front profile (24) of the main structure (14).

**6.** Buckle (10) according to claim 4 or 5, wherein the bar (40) shows an undulated outer outline.

**7.** Buckle (10) according to any of the preceding claims, **characterized in that** it is made of a metal or metal alloy, such as Zn+Al+Mg alloy or brass, or a plastic material or a composite material.

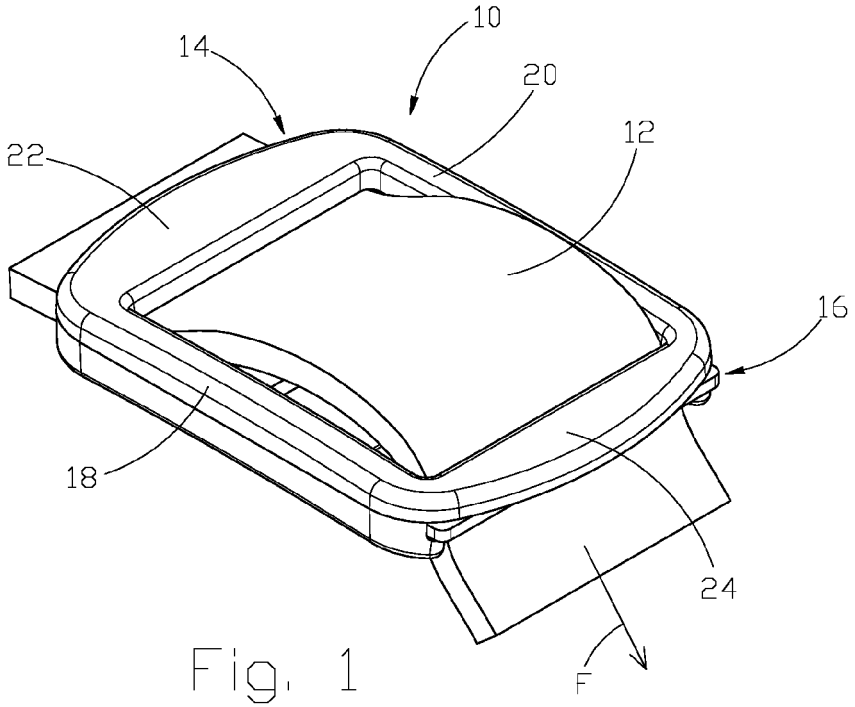


Fig. 1

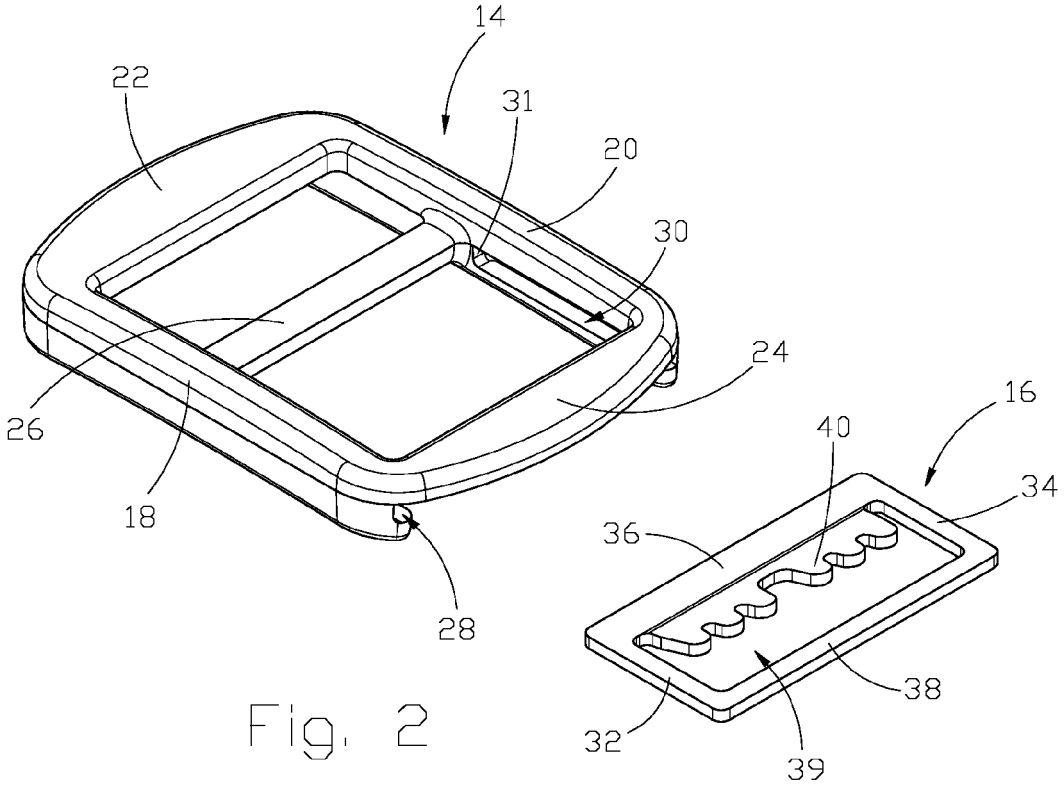


Fig. 2

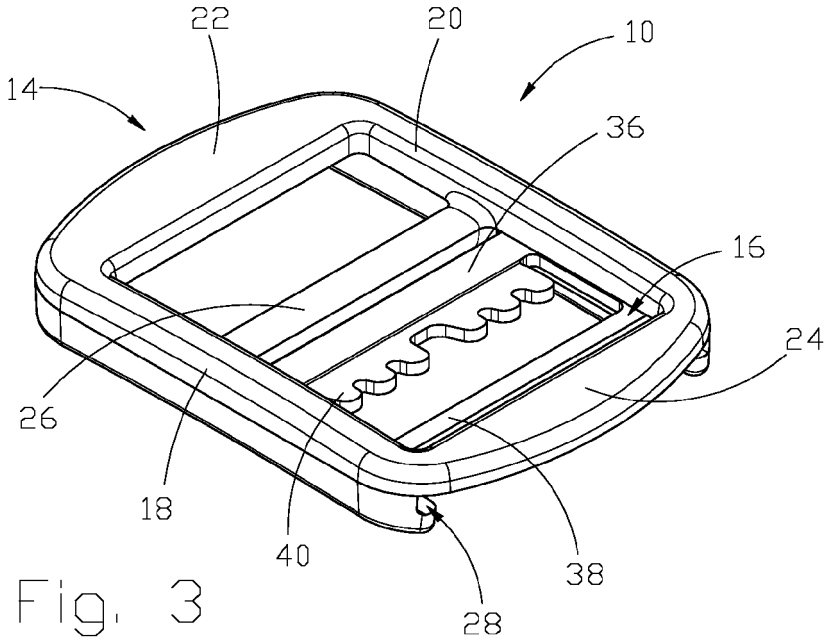


Fig. 3

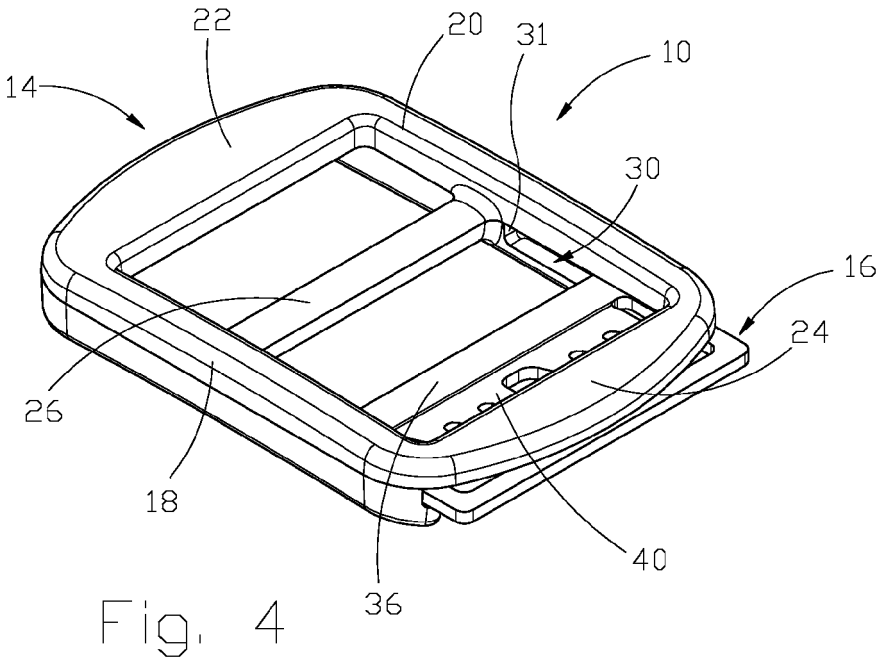


Fig. 4

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# EUROPEAN SEARCH REPORT

Application Number
EP 12 16 4696

## 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 | US 1 437 250 A (KERNGOOD ALLEN H)<br>28 November 1922 (1922-11-28)<br>* page 1, lines 30-43, 64-92; figures 3-5 *<br>----- | 1-7 | INV.<br>A44B11/10 |
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| A | FR 1 366 984 A (COMPTOIR DE NOUVEAUTES MONDIAL) 17 July 1964 (1964-07-17)<br>* page 1, paragraph 5 *<br>* page 2, paragraph 2; figures 3,4 *<br>----- | 1-7 | TECHNICAL FIELDS SEARCHED (IPC)<br>A44B |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 14 November 2012 | Monné, Eric |

CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 16 4696

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14-11-2012

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