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(54) **Coupling element for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like**

(57) A coupling element (10) for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like, comprising
- at least one fixing portion (14), which has a first resting contact face (15) and a second opposite exposed face (16), with at least one through hole (17) that lies between the first face (15) and the second face (16), and
- at least one engagement portion (19), with a seat (20) for a hardware closure detent, and an opening (21) for accessing the seat (20), the coupling element (10) comprising at least one covering element (24) to be fixed, by way of fixing means, on the second face (16) of the at least one fixing portion (14), so as to cover the at least one through hole (17).

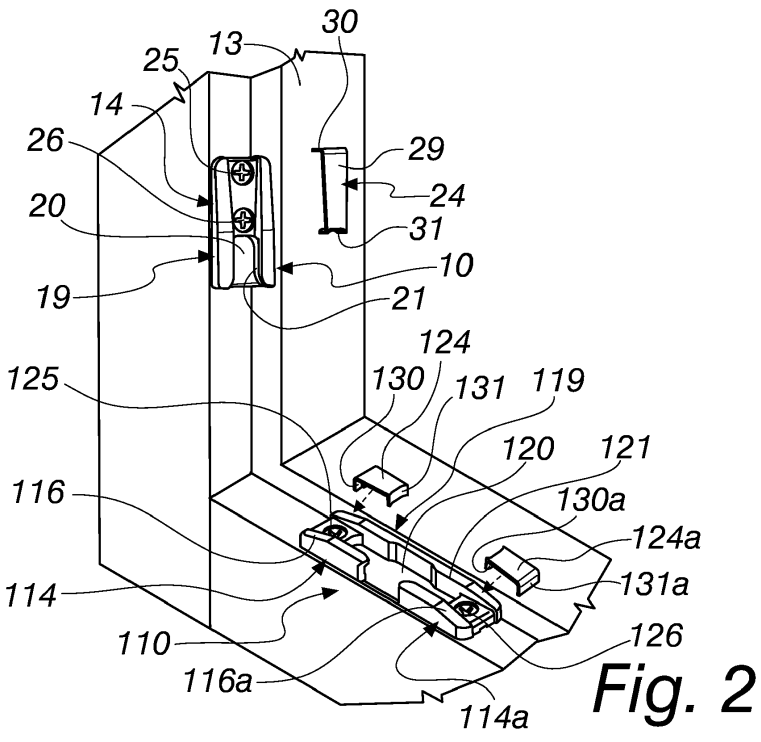

Fig. 2

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Description

[0001] The present invention relates to a coupling element for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like.

[0002] Perimeter hardware for doors or windows of the shutter and tilt-and-turn type typically comprise a plurality of detents which, mounted on a rod actuated by a lock, for example in hardware of the so-called cremone bolt type, are preset to engage a corresponding coupling element that is fixed to the frame of the door or window.

[0003] Usually, a coupling element for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like comprises

- at least one fixing portion, which has a first resting contact face and a second opposite exposed face, with at least one through hole, typically one or two through holes, that lies between said first and second faces,
- at least one engagement portion, with a seat for a hardware closure detent, and an opening for accessing said seat which is open at least on the side of said second face.

[0004] A coupling element is fixed to the frame of a door or window by means of a screw that is adapted to be inserted through a corresponding through hole on the fixing portion of said coupling element, or by means of a plurality of screws, depending on the number of holes.

[0005] Such known coupling elements have the limitation that they are visible when the door or window is open and that the heads of their frame fixing screws are equally visible, to the full detriment of the perceived aesthetics of the door or window.

[0006] Furthermore, the heads of the exposed screws are more exposed to the aggression of atmospheric agents, to the full detriment of the overall duration of the efficiency of the door or window.

[0007] The aim of the present invention is to provide a coupling element for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like that is capable of obviating the cited limitations of coupling elements of the known type.

[0008] Within this aim, an object of the invention is to provide a coupling element that has a better visual impact than known coupling elements.

[0009] Another object of the invention is to provide a coupling element that can be fixed easily to a door or window frame, like known coupling elements.

[0010] Another object of the invention is to provide a coupling element the frame fixing screws of which are more protected, to the full benefit of the durability of its functionality.

[0011] Another object of the invention is to provide a coupling element that is intuitive to use.

[0012] This aim, as well as these and other objects that will become better apparent hereinafter, are achieved by a coupling element for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like, comprising

- at least one fixing portion, which has a first resting contact face and a second opposite exposed face, with at least one through hole that lies between said first face and said second face,
- at least one engagement portion, with a seat for a hardware closure detent, and an opening for accessing said seat which is open at least on the side of said second face,

characterized in that it comprises at least one covering element to be fixed, by way of fixing means, on said second face of said at least one fixing portion, so as to cover said at least one through hole.

[0013] Further characteristics and advantages of the invention will become better apparent from the description of four preferred but not exclusive embodiments of the coupling element according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a schematic view of a part of hardware for doors or windows of the type with tilt-and-turn, comprising a plurality of coupling elements according to the invention;
Figure 2 is an exemplifying perspective view of the application and operation of two coupling elements according to the invention;
Figure 3 is a front view of a coupling element according to the invention;
Figure 4 is a side view, taken along the sectional line IV-IV of Figure 3, of the coupling element according to the invention, in a first step of assembly;
Figure 5 is the same view of Figure 4 in a second step of assembly;
Figure 6 is a view of a second embodiment of the coupling element according to the invention;
Figure 7 is a view of a third embodiment of the coupling element according to the invention;
Figure 8 is a view of a fourth embodiment of the coupling element according to the invention.

[0014] With reference to Figure 1, a first coupling element according to the invention is designated by the reference numeral 10, while a second coupling element according to the invention is designated by the reference numeral 110.

[0015] Each coupling element is intended to accommodate and engage a closure detent, respectively 11 and 111, which are part of a generic perimeter hardware 12 for doors or windows of the type with shutter-like opening or with tilt-and-turn opening.

[0016] In Figure 2, a first coupling element 10 and a second coupling element 110 are shown, by way of ex-

ample, fixed to a frame 13 of a door or window.

[0017] A first coupling element 10 is described hereinafter by way of non-limiting example of the invention.

[0018] The first coupling element 10 comprises

- a fixing portion 14, which has a first face 15 for resting contact against the frame 13 and a second opposite exposed face 16 provided with two through holes 17 and 18 that lies between said first face 15 and said second face 16,
- an engagement portion 19, with a seat 20 for a hardware closure detent, such as the detent 11 of Figure 1, and an opening 21 for accessing the seat 20 which is open both on the side of said second face 16 and in the main direction 23 of extension of said coupling element 10.

[0019] The coupling element 10 according to the invention is characterized in that it comprises a covering element 24 to be fixed, by way of fixing means, on said second face 16 so as to cover the through holes 17 and 18, thus concealing from view the heads of the screws 25 and 26 inserted in the through holes 17 and 18.

[0020] In the first embodiment of the invention, shown in Figures 3 to 5 and designated therein by the reference numeral 10, the covering element 24 is constituted by a flat body 29 that is contoured to enter a complementarily shaped groove 28 defined on the first face 16 at the through holes 17 and 18.

[0021] The fixing means are constituted by two opposite wings 30 and 31, which extend from the flat body 29 and in a direction that is substantially perpendicular to said flat body 29.

[0022] Each one of the wings 30 and 31 has, at the free end, a tooth 32 and 33 respectively, which is adapted to engage by snap action a corresponding undercut 34 and 35 defined on the fixing portion 14 at the ends, in a longitudinal direction, of the groove 18 for the flat body 29.

[0023] As clearly visible in Figures 4 and 5, to fix the covering element 24 to the fixing portion 14 it is sufficient to engage a first tooth 33 with the corresponding undercut 35 and then push the flat body 29 of the covering element 24 within the groove 28 so that an elastic deformation of the covering element 24 allows the second opposite tooth 32 to engage by snap action the corresponding undercut 34.

[0024] The covering element 24, with the fixing means of the mechanical type, can be made of metallic material, of plastic material or of wood-like material, as well as of other similar and technically equivalent materials.

[0025] A second coupling element 110 of Figures 1 and 2, a constructive variation of the first coupling element 10, has

- two flat fixing portions 114 and 114a, each provided with a corresponding first face for resting against the frame 13, and a second exposed opposite face 116 and 116a, with two through holes that lie between said first and second faces,
- and an engagement portion 119, which is intermediate between the two opposite flat fixing portions 114 and 114a, with a seat 120 for a hardware closure detent, such as the detent 111 of Figure 1, and an opening 121 for access to the seat 120 that is open on the side of the second faces 116 and 116a.

[0026] The coupling element 110 according to the invention is characterized in that it comprises two covering elements 124 and 124a, to be fixed by way of fixing means on the corresponding second face 116 and 116a so as to cover the through holes, concealing from view the heads of the screws 125 and 126 inserted in said through holes.

[0027] The fixing means are constituted for example by opposite wings 130, 131 and 130a and 131 a, as described above for the first coupling element 10.

[0028] Figure 6 shows schematically a second embodiment of the coupling element according to the invention, designated therein by the reference numeral 210.

[0029] In this second embodiment of the coupling element 210 according to the invention, the fixing means of the covering element 224 are constituted by a magnet 240 that is inserted in the body of the fixing portion 214 on the side of the first face 215, within a corresponding complementarily shaped seat 241.

[0030] The covering element 224 is made of ferromagnetic material, with such a polarity as to cause the immediate attraction and fixing of the covering element 224 against the fixing portion 214.

[0031] In this embodiment, the screws can be made of stainless steel.

[0032] In a third embodiment of the invention, shown schematically in Figure 7 and designated therein by the reference numeral 310, the fixing means are constituted by a covering element 324, made of polarized ferromagnetic material, and by the heads of the fixing screws 325 and 326.

[0033] In this third embodiment of the coupling element 310 according to the invention there is no magnet.

[0034] In a fourth embodiment of the invention, shown schematically in Figure 8 and designated therein by the reference numeral 410, the fixing means are constituted by a magnet 440 that is inserted in the body of the fixing portion 414 on the side of the first face 415, within a corresponding complementarily shaped seat 441, with the covering element 424 made of non-polarized ferromagnetic material.

[0035] Use of a coupling element 10, 110, 210, 310 and 410 according to the invention is therefore intuitive and straightforward.

[0036] After fixing a coupling element to the frame of a door or window, the screws are concealed with a quick and simple front pressure of the covering element on the fixing portion, covering simultaneously one or more fixing screws. The visual impact of the coupling element is linear and flat.

[0037] In practice it has been found that the invention achieves the intended aim and objects.

[0038] In particular, the invention provides a coupling element that has a better visual impact than known coupling elements.

[0039] Moreover, the invention provides a coupling element that can be fixed easily to a door or window frame like known coupling elements.

[0040] Furthermore, the invention provides a coupling element the frame fixing screws of which are more protected, to the full advantage of the duration over time of its functionality.

[0041] Moreover, the invention provides a coupling element that is intuitive to use.

[0042] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0043] In practice, the components and the materials used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to requirements and to the state of the art.

[0044] The disclosures in Italian Patent Application No. PD2014A000071 from which this application claims priority are incorporated herein by reference.

[0045] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A coupling element (10) for perimeter hardware for doors or windows of the type with shutter-like opening, with tilt-and-turn opening and the like, comprising

   - at least one fixing portion (14), which has a first resting contact face (15) and a second opposite exposed face (16), with at least one through hole (17) that lies between said first face (15) and said second face (16),
   - at least one engagement portion (19), with a seat (20) for a hardware closure detent, and an opening (21) for accessing said seat (20) which is open at least on the side of said second face (16),

   characterized in that it comprises at least one covering element (24) to be fixed, by way of fixing means, on said second face (16) of said at least one fixing portion (14), so as to cover said at least one through hole (17).

2. The coupling element according to claim 1, **characterized in that** said covering element (24) is constituted by a flat body (29) that is contoured so as to enter a complementarily shaped groove (28) defined on said first face (16) at two through holes (17, 18).

3. The coupling element according to one or more of the preceding claims, **characterized in that** said fixing means are constituted by two opposite wings (30, 31) that extend from the flat body (29) and in a direction that is substantially perpendicular to said flat body (29).

4. The coupling element according to one or more of the preceding claims, **characterized in that** each one of the wings (30, 31) has, at the free end, a tooth (32, 33) adapted to engage by snap action a corresponding undercut (34, 35) defined on said fixing portion (14) at the ends, in a longitudinal direction, of the groove (18) for the flat body (29).

5. The coupling element according to one or more of the preceding claims, **characterized in that** said covering element (24), with said fixing means of the mechanical type, is made of metallic material or plastic material or wood-like material and of other similar and technically equivalent materials.

6. The coupling element according to claim 1, **characterized in that** it has:

   - two flat fixing portions (114, 114a), each provided with a corresponding first face for resting against the frame, and a second opposite exposed face (116, 116a) with two through holes that are extended between said first and second faces,
   - and an engagement portion (119), which is intermediate between the two opposite flat fixing portions (114, 114a), with a seat (120) for a hardware closure detent and an opening (121) for access to the seat (120), said coupling element (110) comprising two covering elements (124, 124a) to be fixed by way of fixing means on the corresponding second face (116, 116a) so as to cover the through holes, hiding from view the heads of the screws (125, 126) inserted in said through holes.

7. The coupling element according to one or more of the preceding claims, **characterized in that** the fixing means are constituted by a magnet (240) that is inserted in the body of the fixing portion (214) on the side of the first face (215), within a corresponding complementarily shaped seat (241), said covering element (224) being made of polarized ferromagnet-

ic material, with such a polarity as to cause the immediate attraction and fixing of said covering element (224) against the fixing portion (214).

8. The coupling element according to claims 1, 2 and 6, **characterized in that** said fixing means are constituted by the covering element (324), made of polarized ferromagnetic material.

9. The coupling element according to claims 1, 2 and 6, **characterized in that** said fixing means are constituted by a magnet (440) that is inserted in the body of the fixing portion (414) on the side of the first face (415), within a corresponding complementarily shaped seat (441), with the covering element (424) made of ferromagnetic material.

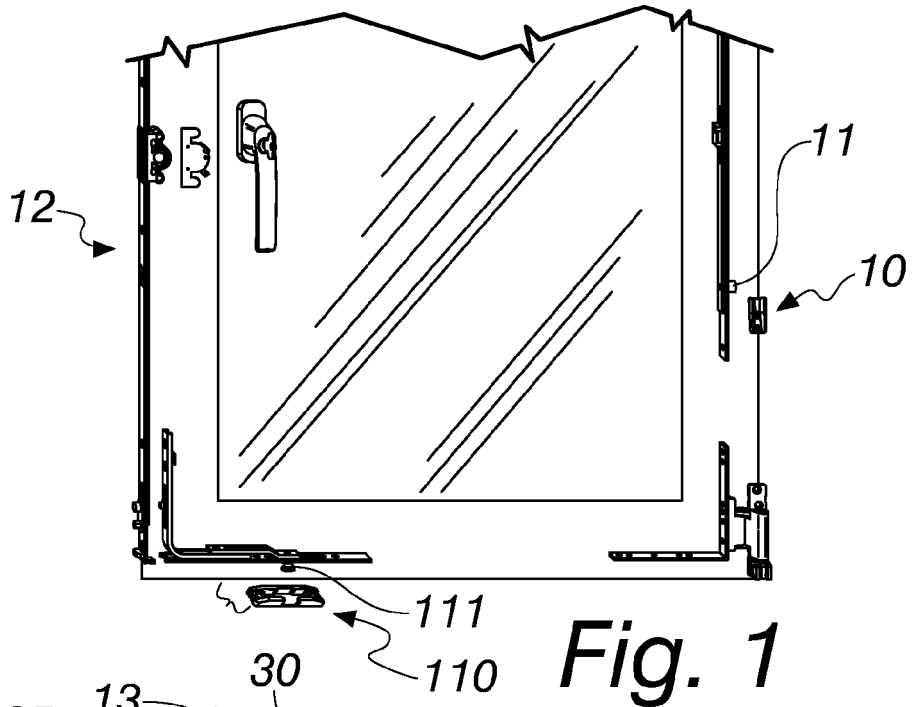
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Fig. 1

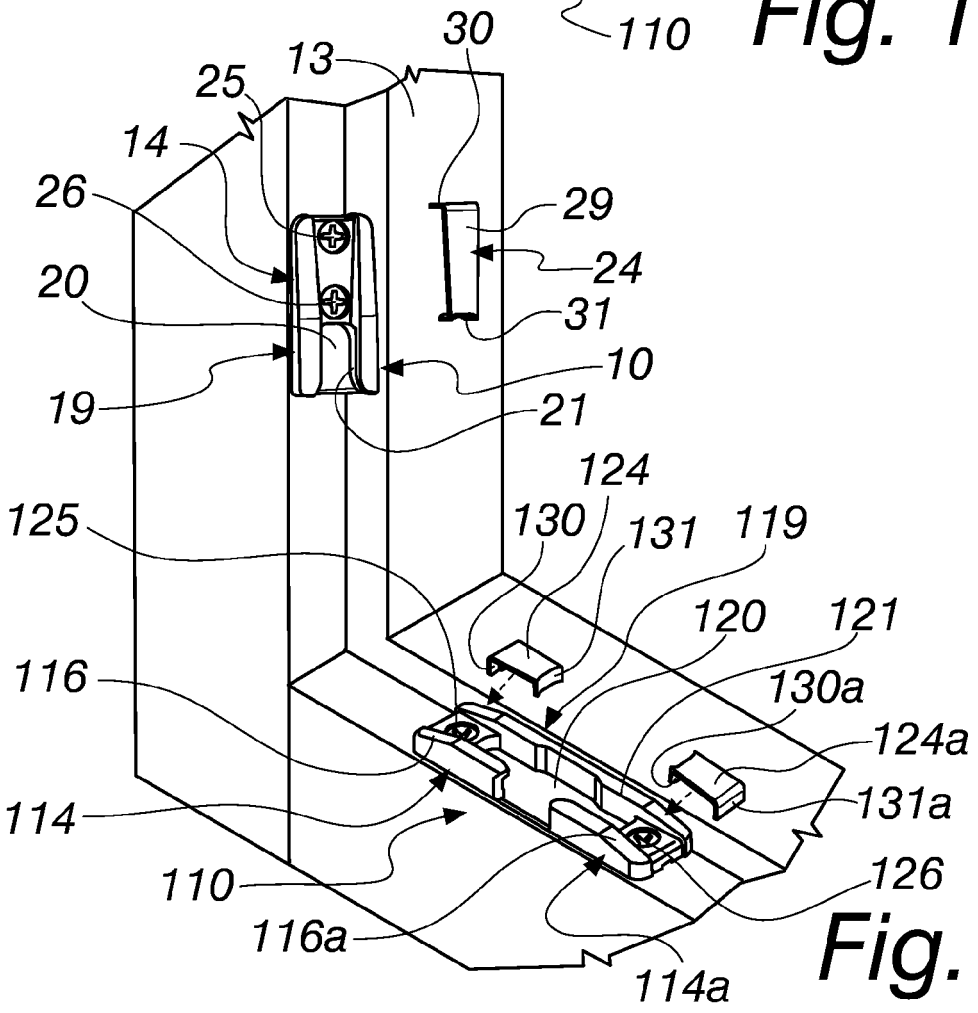
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Fig. 2

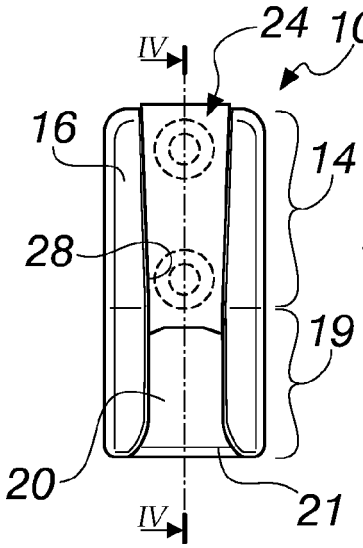

Fig. 3

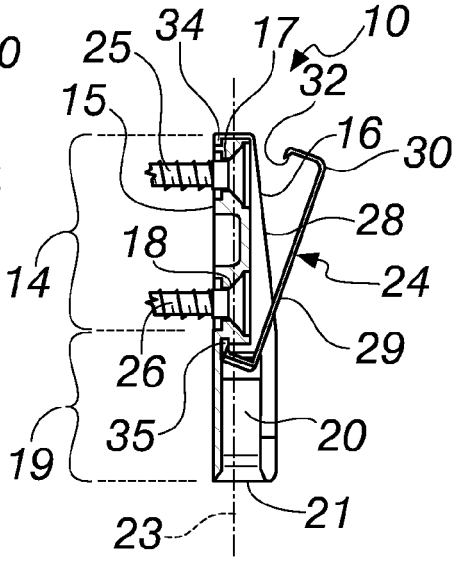

Fig. 4

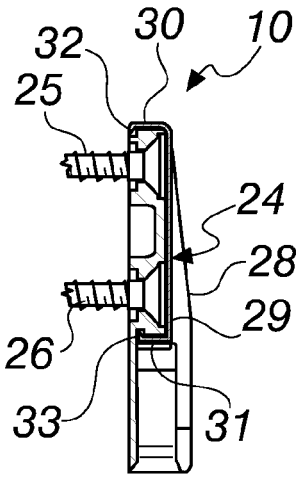

Fig. 5

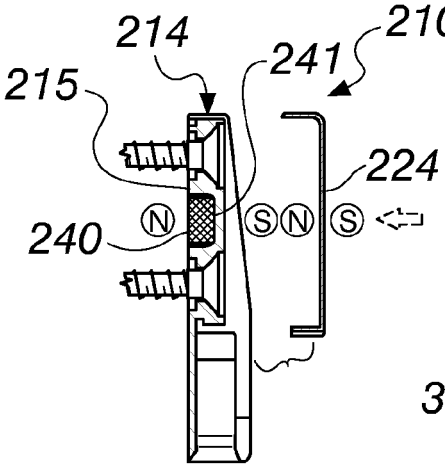

Fig. 6

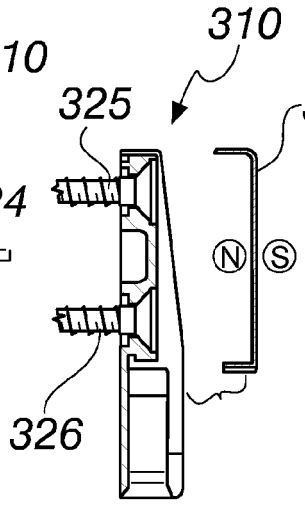

Fig. 7

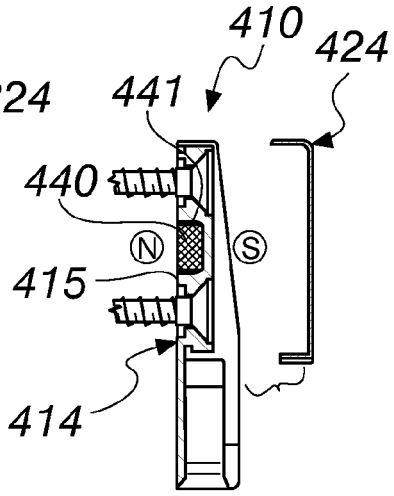

Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 9948

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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	22 July 2015	Pérez Méndez, José F

CATEGORY OF CITED DOCUMENTS

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