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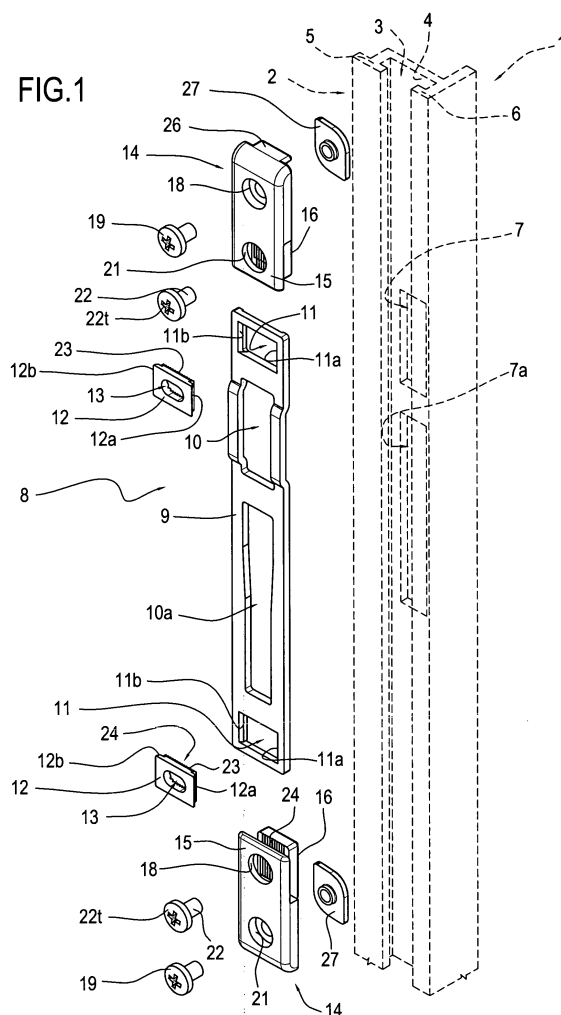
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Striker plate for doors and windows

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Described is a striker plate for doors/windows comprising: a plate-like main body (9) which may be positioned in contact with a second surface of the flanges (5, 6), having at least one through seat (10) for passage of operating means, and a pair of openings (11) at the respective ends which may each be engaged by a respective occluding and shimming insert (12) which is larger in size than the respective opening (11) and has a through slot-shaped opening (13) extending perpendicularly to the longitudinal extension of the main body (9) and also having at least two portions (12a, 12b) for striking against respective edges (11a, 11b) of the corresponding opening (11); two attachments (14) having a first portion equipped with two parallel arms (15, 16), to form a "U", positioned to cover both sides of the respective end zones of the main body (9), at the openings (11) and the respective insert (12), and to keep the main body (9) in firm contact, during use, against the second surface (5, 6), and a second portion (17) having a first through hole (18) for engaging the first means (19) that fastening the attachments (14) to a jamb (2); second means (22) for fastening each attachment (14) to the main body (9) and passing along: a second through hole (21) of the front arm (15); the slotted opening (13) of the insert (12); and the threaded hole (20) of the rear arm (16) positioned, during use, in the groove (3).



Description

[0001] This invention relates to a striker plate for doors and windows.

[0002] The striker plate according to this invention is used, preferably on the frames of doors, French windows, windows etc., in which it is necessary to use a lock, usually with keys, in which a normal latch may be coupled with a bolt. This type of striker plate may be used on doors and windows with frames manufactured from metallic or synthetic material (such as PVC) or in a hybrid form, using wood, too.

[0003] These frames are equipped, on the front part of the mobile frame or sash, with an opening for the passage of the element or latch for opening and closing the sash (controlled by the handle) and for the bolt (operated by the key), obtained by machining the profile.

[0004] The opening is usually formed along a jamb of the sash with a front surface, so that when the sash is in the closed position, the latch and bolt can pass through the surface and into respective seats formed on the front surface of the fixed frame.

[0005] The jamb of the sash, in these doors/windows, comprises a longitudinal groove formed by the above-mentioned surface defined by two protruding flanges with an L-shaped opposite profile.

[0006] This opening is closed by the above-mentioned striker plate which essentially comprises:

- a main body designed to be housed at the openings and having two respective independent openings coinciding with the openings through which the latch and the bolt pass;
- screws for fastening the body to the surface of the sash and passing through respective seats, present at the two ends of the main body.

[0007] Now, as is the normal practice, the last step for assembly of the doors/windows involves closing the area with the latch and bolt and must allow for a correct adjustment between the two above-mentioned elements (latch and bolt) and the respective openings of the striker plate, in order to permit a correct operation of the elements concerned (that is, the correct closure of the door/window).

[0008] In order to obtain this adjustment a first type of plate is equipped with holes for the passage of screws of a slotted type in order to carry out an adjustment (only partial, however) along the longitudinal (or vertical) axis of the striker plate.

[0009] This solution is not very reliable over time, since the final and permanent position of the striker plate depends on the correct fastening of the screws which, if they loosen, would cause movement of the striker plate (due to the presence of the slots) with consequent loss of the opening - latch and bolt alignment. It should also be noted that, in this case, there would be no adjustment in a transversal direction of the plate, with consequent

difficulty in achieving a correct and secure closing of the door/window.

[0010] Another solution is known from document EP 851.082 in which the striker plate is equipped with, in addition to the main body, two auxiliary attachments which may be positioned at the respective ends of the main body and by which the main body may be fastened to the surface of the sash.

[0011] Each auxiliary attachment has:

- a first portion, outside the overall dimensions of the main body, and equipped with a slotted seat, extending along the longitudinal axis of the main body, for the passage of the screws for fastening to the surface of the sash;
- a second portion for joining to the main body, to the rear of the main body, equipped with a second slotted seat, extending along an axis perpendicular to the previous axis, that is, transversal to it.

[0012] Another screw, passing through a hole present at the respective end of the main body, enables the body to be coupled to the attachment using a threaded bushing housed in the second seat.

[0013] The bushing is also equipped with a rear striker element against the respective surface of the attachment; both the surfaces for the reciprocal contact have closely spaced ridges which extend parallel to the longitudinal extension of the body and on which the stability of the position assumed depends after the adjustment along the transversal axis.

[0014] This solution permits the adjustment on two reciprocally perpendicular axes, that is, longitudinal and transversal to the main body, but results in a series of shortcomings of a practical and aesthetical nature.

[0015] The particular assembly or screw - bushing coupling for lateral or transversal adjustment of the main body (an operation which may be carried out not merely during installation by a professional installer, but also by any user during the life of the product) may be difficult with possible defects due to the possibility of rotation or, even, falling of the bushing with the striker element (which is not visible during the operation) with the consequent need to fully dismantle the striker plate in order to reset the striker plate as a whole.

[0016] As regards the aesthetical aspect, it should be noted that, since the striker plate is a clearly visible component with the sash open, the overlapping of the attachments, which are different in size to the main body, and the exposed slots are accepted by the end user.

[0017] The aim of this invention is therefore to overcome these shortcomings by manufacturing a striker plate for doors/windows which is extremely practical, has a more attractive appearance, with high stability and long life characteristics after assembly, a lower cost and with precise adjustment both during and after completing assembly.

[0018] According to this invention, this aim is achieved

by a striker plate, in particular a striker plate for doors/windows comprising the technical characteristics described in one or more of the appended claims.

[0019] The technical characteristics of this invention, according to the above-mentioned aims, may be clearly inferred from the content of the appended claims and the advantages of this invention are apparent from the detailed description which follows, with reference to the accompanying drawings, which illustrate a non-limiting embodiment of it provided merely by way of an example, and in which:

- figure 1 illustrates an exploded, perspective view of a striker plate for doors/windows according to this invention next to a sash of the door/window;
- figure 2 illustrates a perspective view of the striker plate for doors/windows of figure 1 in a configuration assembled on the jamb of a sash;
- figure 3 illustrates the section III - III of figure 2 in a configuration where the striker plate is fastened to the sash;
- figure 4 illustrates another embodiment of some of the components of the striker plate, again in a section III - III like that of figure 3;
- figure 5 illustrates the section III - III of figure 3 in a transversal adjustment configuration of the striker plate associated with the sash;
- figure 6 illustrates a scaled-up detail from figure 3;
- figure 7 illustrates a scaled-up detail from figure 4;
- figures 8 and 9 illustrate perspective and front views, respectively, of a component, in particular one of the end attachments.

[0020] According to the accompanying drawings, and with particular reference to figures 1 and 2, the striker plate according to this invention, denoted in its entirety by the numeral 8, is used on doors/windows comprising: a mobile frame 1 or sash (partially indicated with a dashed line, since it does not strictly concern this invention) having a jamb 2 comprising a groove 3 forming a first front surface 4 enclosed between two opposing protruding L-shaped longitudinal flanges 5 and 6 to form a second surface.

[0021] The first surface 4 has a pair of slots 7 and 7a for passage of means for closing the door/window (such as a latch and a bolt, which are not illustrated here, since they do not form part of this invention).

[0022] The striker plate 8 may be fitted to the jamb 2 and comprises the following main components: a plate-like main body 9; a pair of occluding or shimming inserts 12; two attachments 14 for connecting and fastening the main body 9 to the jamb 2; first means 19 for fastening the attachments 14 to the jamb 2; second means 22 for fastening the attachments 14 to the main body 9.

[0023] Looking in more detail, the plate-like main body 9 may be positioned in contact with the second surface of the flanges 5 and 6 (see also figures 3 and 6).

[0024] There are two through seats 10 and 10a on the

main body 9 for passage of the above-mentioned operating means, and a pair of openings 11 at the respective ends which may each be engaged, during assembly, by a respective insert 12. Each occluding and shimming insert 12 is larger in size than the respective opening 11 and has, in turn, a through slot-shaped opening 13 extending perpendicularly to the longitudinal extension of the main body 9 (used to adjust the body 9, as will be seen below)

[0025] In addition to this, each insert 12 has at least two portions 12a, 12b for striking against respective edges 11a, 11b of the corresponding opening 11 (see also figures 3 to 6).

[0026] With regard to the attachments 14, each of these has:

- a first portion equipped with two parallel arms 15 and 16, to form a "U", positioned to cover both sides of the respective end zones of the main body 9, at the openings 11 and the respective insert 12, and to keep the main body 9 in permanent contact, during use, against the second surface 5, 6; one of the arms, labelled 16 and forming the rear one after assembly, has a threaded hole 20, whilst the second arm, the front one labelled 15, has a second through hole 21;
- a second portion 17 having a first through hole 18 for engaging the means 19 for fastening the attachments 14 to the jamb 2.

[0027] The fastening means comprise a screw 19 entering the first hole 18 made in the second portion 17 and screwed to a cam-like rhomboidal plate 27 that strikes against the inside of the flanges 5 and 6 forming the second surface.

[0028] Thanks to this configuration of the first fastening means 19 it is possible to make a first adjustment along a vertical axis Z of the entire striker plate 8 to enable the correct positioning of the openings 10 and 10a with respect to the slots 7 and 7a.

[0029] The second fastening means 22 between each attachment 14 and the main body 9 pass through: the second through hole 21 of the front arm 15; the slotted opening 13 of the insert 12; and the threaded hole 20 of the rear arm 16 positioned, during use, in the groove 3.

[0030] In short, these second fastening means comprise a second screw 22 passing through the second hole 21 and the slot 13 of the insert 12 for screwing into the threaded hole 20. The two shorter sides 12a, 12b of each insert 12 are the above-mentioned striker portions, with a first sloping surface section 12c, to form a sort of countersink, and at least a second rectilinear surface section 12d in order to allow the main body 9 to be at least partially snapped into the respective opening 11 (see figures 3 to 6).

[0031] The striker edges of each opening 11 on the main body 9 are its shorter sides 11a, 11b, with a bevel 11c forming a sort of front countersink sloping towards the inside of the main body 9 to enable entry of the inserts

12.

[0032] The joint between each insert 12 and the respective opening 11 is also strengthened by the screw 22 forming the second fastening means.

[0033] This is clearly shown in figures 3, 4 and 5 where it may be seen how the second through hole 21 of each front arm 15 has a diameter D21 greater than the diameter D22 of a head 22t of the screw 22: this permits the contact of the head 22t of the screw 22 directly on the insert 12 and the respective pressure, by screwing inside the threaded hole 20 of the rear arm 16, on the main body 9 so as to enable the permanent contact on the second surface 5, 6, that is, on the flanges during the final fastening.

[0034] In order to obtain a second transversal adjustment of the main body 9, that is, along a horizontal axis X (see figure 5), again to permit the correct positioning of the openings 10 and 10a with respect to the slots 7 and 7a, it will be sufficient to loosen the screw 22 in order to enable the translation of the main body 9 with respect to the flanges 5 and 6, in order to move it into the suitable position and, subsequently, tighten the screw 22.

[0035] Another detail which may be added to the embodiment concerns the presence of means 24 for longitudinally aligning the main body with respect to the groove 3.

[0036] These means 24 may be present on the rear surface 23 of each insert 12 and on the inner surface 25 of each rear arm 16 of the attachments 14 facing against the respective opening 11.

[0037] In the embodiment illustrated, provided merely by way of an example, these longitudinal alignment means 24 may consist of a series of continuous and parallel toothed profiles formed on the two surfaces facing each other which, if necessary, may be brought into contact, by applying a greater tightening pressure of the screw 22 on the insert 12 which, by additional sliding inside the opening may locate itself with its inner surface 23 in contact with the surface 25.

[0038] In this case, as illustrated in figures 8 and 9, each rear arm 16 has the threaded hole 20 formed on the inner surface 25 equipped with part of the alignment means 24.

[0039] Another component may be present on each second portion 17 of the attachments 14.

[0040] Indeed, at the outermost end of the of the second portion 17 there is a protruding tab 26 which is housed, during use, inside the groove 3 formed by the flanges 5 and 6, to close the area of the groove 3 engaged by the striker plate 8: this element therefore covers the area to improve the aesthetic effect and, at the same time, increases the security of the assembled part and its service life thanks to the formation of a closed chamber which prevents the entry of dust or other elements which could damage the moving components.

[0041] A striker plate structured in this way therefore achieves the pre-set aims thanks to a combination of components designed to permit fast and simple assem-

bly and an extremely sure and precise adjustment on two axes.

[0042] The presence of the inserts provides a dual positive effect: firm positioning of the main body on the flanges, thereby increasing security against burglary, and the possibility of sure transversal adjustment even by non-specialised personnel.

[0043] The presence of the attachments with U-shaped arms achieves an improved appearance (operational and adjustment parts are hidden from view), as well as contributing to a firm fastening of the main body.

[0044] Longitudinal adjustment means may be effected using the inserts and the attachments without affecting the basic configuration of the main body (which is always the same) thus reducing the overall costs of the striker plate.

[0045] The invention described herein is susceptible of industrial application and may be modified and adapted in several ways without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent means.

Claims

1. A striker plate for doors/windows, the doors/windows being of the type comprising a mobile frame (1) having a jamb (2) comprising a groove (3) forming a first front surface (4) enclosed between two opposing protruding L-shaped longitudinal flanges (5, 6) to form a second surface, and the first surface (4) having at least one slot (7) for passage of means of closing the door/window; the striker plate (8) being attachable to the jamb (2) and comprising at least:

- a plate-like main body (9) which may be positioned in contact with the second surface of the flanges (5, 6), having at least one through seat (10) for passage of the operating means, and a pair of openings (11) at the respective ends which may each be engaged, during assembly, by a respective

- an occluding and shimming insert (12) larger in size than the respective opening (11) and having a through slot-shaped opening (13) extending perpendicularly to the longitudinal extension of the main body (9) and also having at least two portions (12a, 12b) for striking against the respective edges (11a, 11b) of the corresponding opening (11);

- two attachments (14) having a first portion equipped with two parallel arms (15, 16), to form a "U", positioned to cover the respective end zones of the main body (9), at the openings (11) and the respective insert (12), and to keep the main body (9) in firm contact, during use, against the second surface (5, 6), and a second portion

- (17) having a first through hole (18) for engaging the means (19) that fasten the attachments (14) to the jamb (2); one of the arms (16), the rear one, having a threaded hole (20), and the second arm (15), the front one, having a second through hole (21);
 - second means (22) for fastening each attachment (14) to the main body (9) and passing along: the second through hole (21) of the front arm (15); the slotted opening (13) of the insert (12); and the threaded hole (20) of the rear arm (16) positioned, during use, in the groove (3).
2. The striker plate according to claim 1, **characterised in that** the two shorter sides (12a, 12b) of each insert (12) are the striker portions, with a first sloping section (12c), to form a sort of countersink, and a second rectilinear surface (12d) in order to allow the main body (9) to be at least partially snapped into the respective opening (11).
 3. The striker plate according to claim 1, **characterised in that** the striker edges of each opening (11) on the main body (9) are its shorter sides (11a, 11b), with a bevel (11c) forming a sort of front countersink sloping towards the inside of the main body (9).
 4. The striker plate according to claim 1, **characterised in that** each insert (12) has a rear surface (23) equipped with a part of means (24) for longitudinally aligning the position of the main body (9).
 5. The striker plate according to claim 1, **characterised in that** each rear arm (16) of the attachments (14) has an inner surface (25), which may be faced against the respective opening (11), equipped with a part of means (24) for longitudinally aligning the position of the main body (9).
 6. The striker plate according to claims 1 and 5, **characterised in that** each rear arm (16) has the threaded hole (20) formed on the inner surface (25) that is equipped with part of the alignment means (24).
 7. The striker plate according to claim 1, **characterised in that** each second portion (17) of the attachments (14) has, at the outermost end, a protruding tab (26) housed, during use, inside the groove formed by the flanges (5, 6), to close the area of the groove (3) engaged by the striker plate (8).
 8. The striker plate according to claim 1, **characterised in that** the first fastening means comprise a screw (19) entering the first hole (18) made in the second portion (17) and screwed into a cam-like rhomboidal plate (27) that strikes against the inside of the flanges (5, 6) forming the second surface.

9. The striker plate according to claim 1, **characterised in that** the second through hole (21) of each front arm (15) has a diameter (D21) greater than the diameter (D22) of a head (22t) of a screw (22) forming the second fastening means, in order to permit contact with the insert (12) and the respective pressure, by screwing inside the threaded hole (20) of the rear arm (16), on the main body (9) so as to enable firm contact on the second surface (5, 6), that is, on the flanges.

Amended claims in accordance with Rule 137(2) EPC.

1. A striker plate for doors/windows, the doors/windows being of the type comprising a mobile frame (1) having a jamb (2) comprising a groove (3) forming a first front surface (4) enclosed between two opposing protruding L-shaped longitudinal flanges (5, 6) to form a second surface, and the first surface (4) having at least one slot (7) for passage of means of closing the door/window; the striker plate (8) being attachable to the jamb (2) and comprising at least:

- a plate-like main body (9) which may be positioned in contact with the second surface of the flanges (5, 6), having at least one through seat (10) for passage of the operating means, and a pair of openings (11) at the respective ends;
- a pair of occluding and shimming inserts (12), each of the occluding and shimming inserts (12) apt to engage one of the openings (11) during assembly, larger in size than the respective opening (11) and having a through slot-shaped opening (13) extending perpendicularly to the longitudinal extension of the main body (9) and also having at least two portions (12a, 12b) for striking against the respective edges (11a, 11b) of the corresponding opening (11);
- two attachments (14) having a first portion equipped with two parallel arms (15, 16), to form a "U", positioned to cover the respective end zones of the main body (9), at the openings (11) and the respective insert (12), and to keep the main body (9) in firm contact, during use, against the second surface (5, 6), and a second portion (17) having a first through hole (18) for engaging the means (19) that fasten the attachments (14) to the jamb (2); one of the arms (16), the rear one, having a threaded hole (20), and the second arm (15), the front one, having a second through hole (21);
- second means (22) for fastening each attachment (14) to the main body (9) and passing along: the second through hole (21) of the front arm (15); the slotted opening (13) of the insert (12); and the threaded hole (20) of the rear arm

(16) positioned, during use, in the groove (3).

2. The striker plate according to claim 1, **characterised in that** the two shorter sides (12a, 12b) of each insert (12) are the striker portions, with a first sloping section (12c), to form a sort of countersink, and a second rectilinear surface (12d) in order to allow the main body (9) to be at least partially snapped into the respective opening (11).

3. The striker plate according to claim 1, **characterised in that** the striker edges of each opening (11) on the main body (9) are its shorter sides (11a, 11b), with a bevel (11c) forming a sort of front countersink sloping towards the inside of the main body (9).

4. The striker plate according to claim 1, **characterised in that** each insert (12) has a rear surface (23) equipped with a part of means (24) for longitudinally aligning the position of the main body (9).

5. The striker plate according to claim 1, **characterised in that** each rear arm (16) of the attachments (14) has an inner surface (25), which may be faced against the respective opening (11), equipped with a part of means (24) for longitudinally aligning the position of the main body (9).

6. The striker plate according to claims 1 and 5, **characterised in that** each rear arm (16) has the threaded hole (20) formed on the inner surface (25) that is equipped with part of the alignment means (24).

7. The striker plate according to claim 1, **characterised in that** each second portion (17) of the attachments (14) has, at the outermost end, a protruding tab (26) housed, during use, inside the groove formed by the flanges (5, 6), to close the area of the groove (3) engaged by the striker plate (8).

8. The striker plate according to claim 1, **characterised in that** the first fastening means comprise a screw (19) entering the first hole (18) made in the second portion (17) and screwed into a cam-like rhomboidal plate (27) that strikes against the inside of the flanges (5, 6) forming the second surface.

9. The striker plate according to claim 1, **characterised in that** the second through hole (21) of each front arm (15) has a diameter (D21) greater than the diameter (D22) of a head (22t) of a screw (22) forming the second fastening means, in order to permit contact with the insert (12) and the respective pressure, by screwing inside the threaded hole (20) of the rear arm (16), on the main body (9) so as to enable firm contact on the second surface (5, 6), that is, on the flanges.

FIG.1

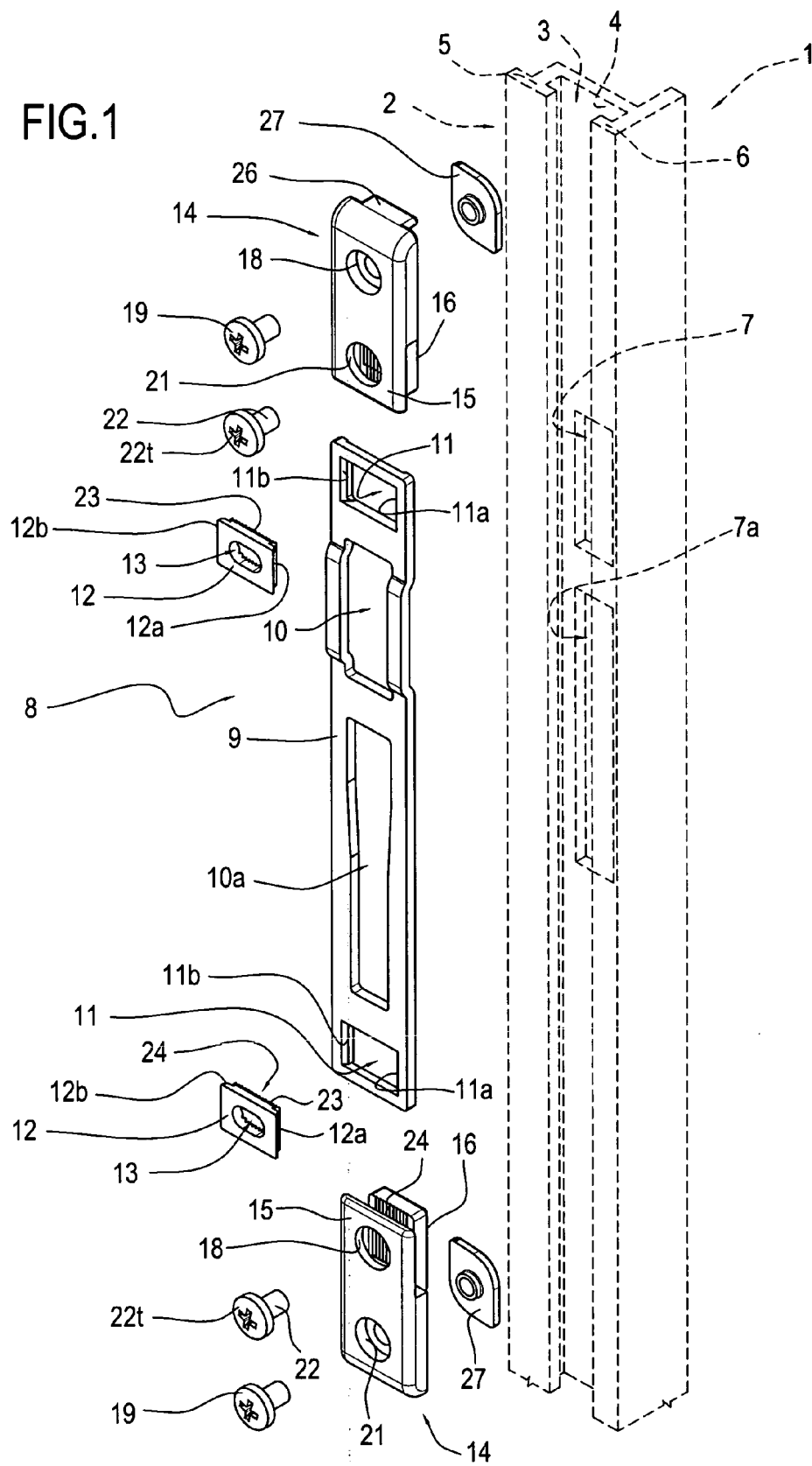
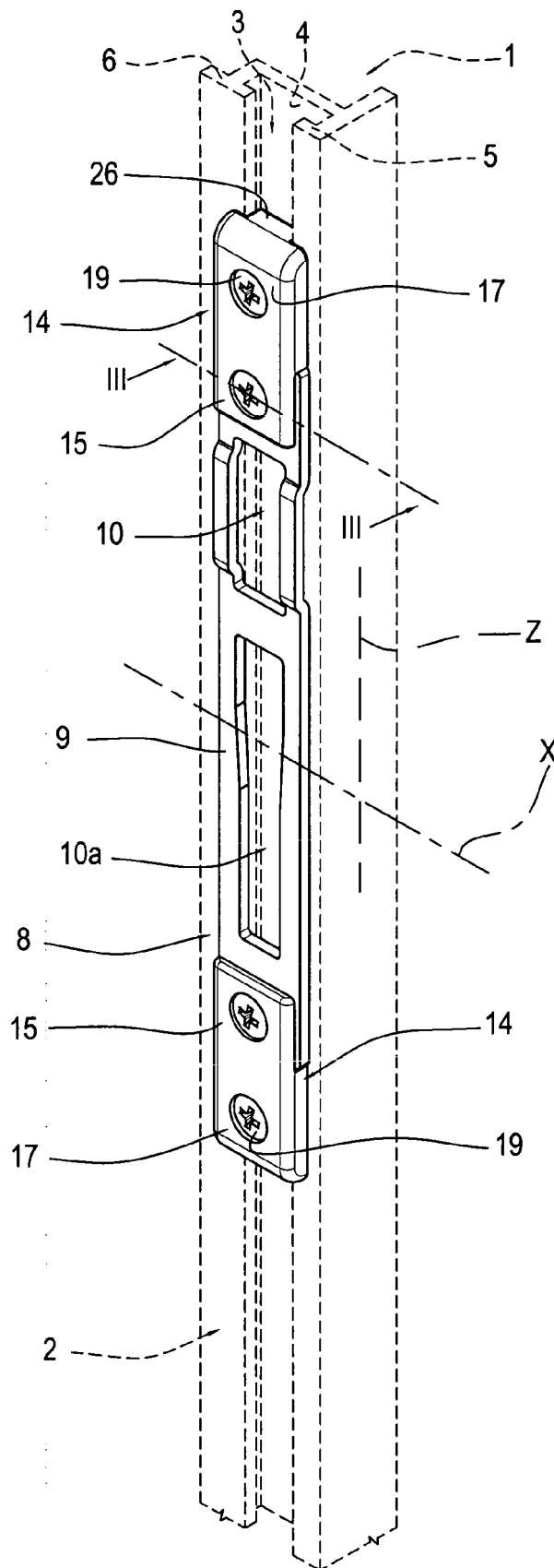


FIG.2



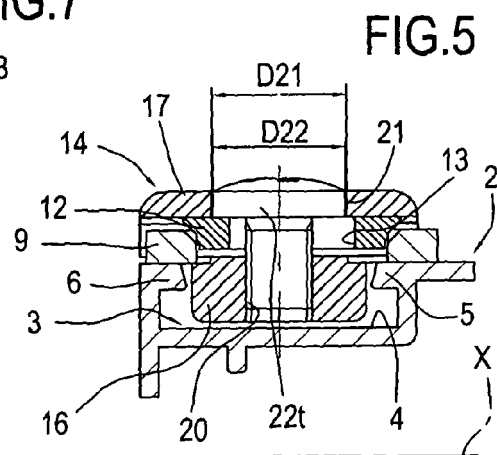
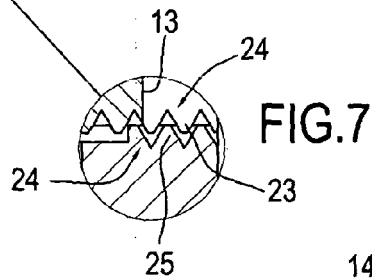
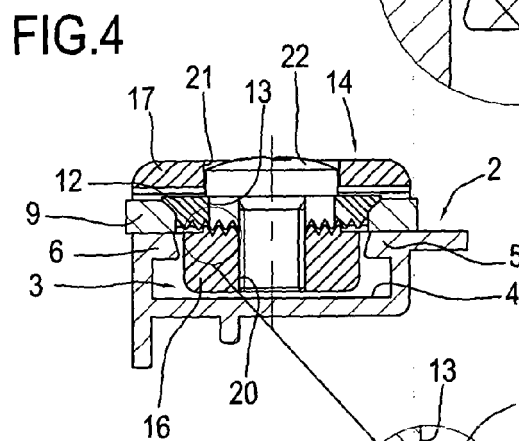
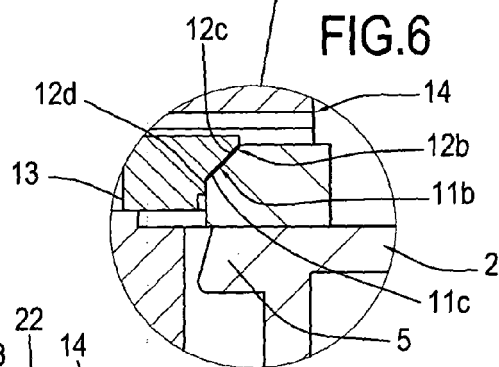
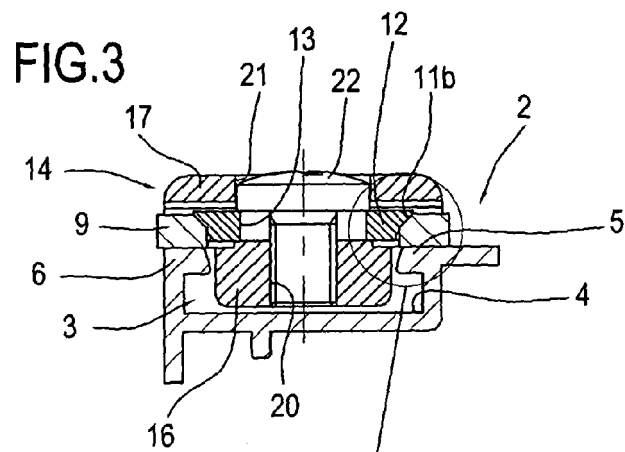


FIG.8

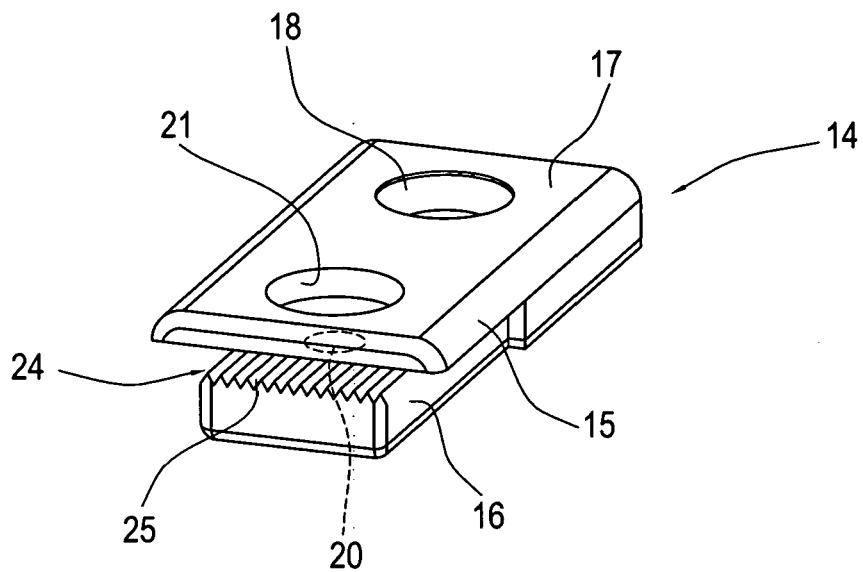
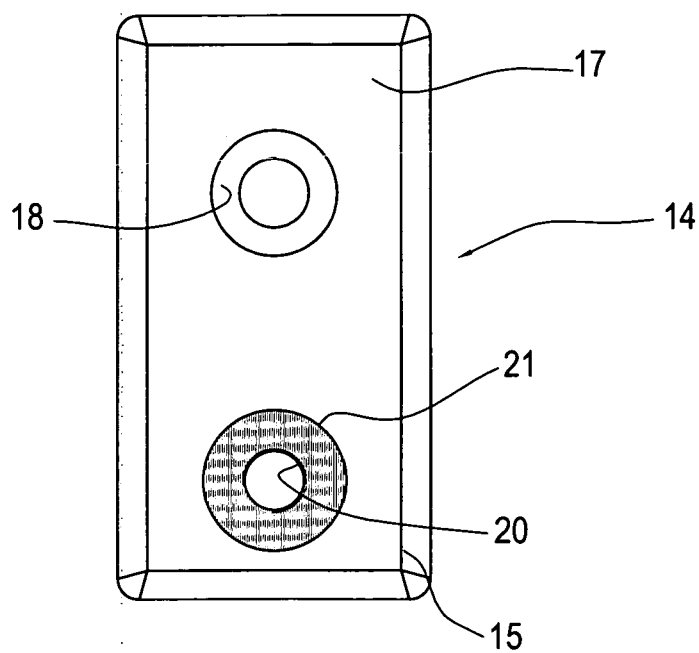


FIG.9





EUROPEAN SEARCH REPORT

Application Number
EP 09 42 5245

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,A	EP 0 851 082 A (NUOVA F.E.B. S.R.L. FABBRICA ELETTRAPPARECCHIATURE BOLOGNA) 1 July 1998 (1998-07-01) * the whole document *	1-9	INV. E05B15/02
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A	US 2 713 506 A (E.A. WICKSTROM) 19 July 1955 (1955-07-19) * the whole document *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		15 October 2009	Cruyplant, Lieve
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 03.82 (F04C01)

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

EP 09 42 5245

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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15-10-2009

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REFERENCES CITED IN THE DESCRIPTION

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