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(54) An anti-burglary safety device for doors and windows

(57) An anti-burglary safety device for doors and windows, comprises a stay arm (103) and a safety bracket (105) adapted for mounting on one and the other of an openable wing part (101) and a stationary main frame part (102) of the door or window, respectively, the safety bracket (105) being formed with a dovetailed cut-out (108) for accommodation of the stay arm (103) to permit opening of the wing part (110) within a ventilation range. By means of a narrowed section (114) adjacent one end the stay arm (103) may be disengaged from the cut-out (108) in the safety bracket (105) by turning in a pivotal connection (116) with of a mounting bracket (104) from a first position, in which it projects substantially aligned with the mounting bracket (104) through the safety bracket (105) and a second position disengaged from the safety bracket (105).

A locking arm (117) is pivotally connected (118) at one end with the narrowed section (114) of the stay arm (103) for pivotal movement from a locking position, in which it overlaps the narrowed section (114), to an inoperative position, in which it is moved away from the narrowed section (114), the locking arm (117) being provided with engagement means (121) for engagement with the mounting bracket (105) to prevent pivotal movement of the locking arm (117) in the first position of the stay arm (103).

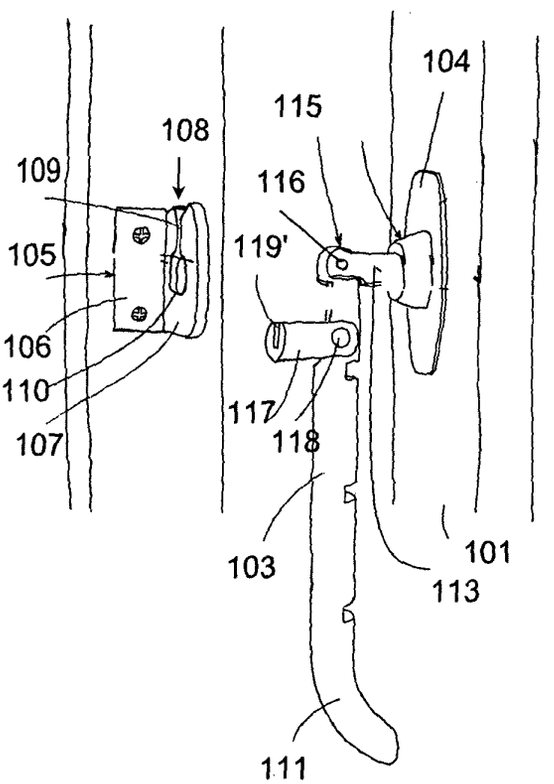

FIG. 6

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Description

[0001] The present invention relates to an anti-burglary safety device for doors and windows, comprising a stay arm and a safety bracket for mounting on one and the other of an openable wing part and a stationary main frame part of the door or window, respectively.

[0002] In particular, the invention is concerned with safety devices intended to afford secure protection against unauthorized entry into a building through an openable window or door, e.g. a terrace or balcony door, the wing part of which has been turned to a ventilation position with a slight opening that would by it self not enable a potential intruder to gain access.

[0003] In the prior art a variety of constructions and designs of such safety devices have been disclosed.

[0004] In US-A-2 000 191 the stay arm for the wing part of a door provided with a key-operated lock of the so-called "Segal" type are formed with open loops, which can each be engaged by the bolt member of the door lock to hold the stay arm against movement. This solution would thus suffer from the inherent limitation that it can only be used in connection with a door lock of a specific type and needs operation by a key to become activated and released.

[0005] FR-A-2 814 193 discloses sliding attachment of a safety member to a conventional window stay member having a hook-end for engagement with a conventional eyelet. The safety member, which is formed with a substantially linear guide channel for the stay member, is provided at one end with a peg-like nose that can engage with the hook-end of the stay member after the hook-end has been positioned in the eyelet. Depending on the squeezing effect of the nose against the hook end of the stay arm this device may either be rather difficult to activate and release or unable to provide a reasonable level of security.

[0006] In a prior safety device commercialized by the applicant, which is fairly inexpensive and simple to mount, use and maintain, the safety bracket is formed with a dovetailed cut-out having a narrowed opening and an enlargement for accommodation of the stay arm to be longitudinally displaceable within the enlargement to permit opening of the wing part within a ventilation range limited by a stop member provided at one end of the stay arm. Adjacent its other end the stay arm has a narrowed section allowing passage of said section through the narrowed opening of the cut-out in the safety bracket. At this other end, the stay arm is pivotally connected, with a projecting bearing member of a mounting bracket adapted to be secured to one of the wing and main frame parts to allow pivotal movement of the stay arm from a first position, in which it projects from the mounting bracket and substantially aligned therewith through the enlargement of the cut-out in the safety bracket and a second position substantially at right angles to the first position, by passage of the narrowed section of the stay arm through the narrowed opening of the cut-out in the safety bracket.

[0007] Due to the provision of the narrowed section, which is the only part of the stay arm that can pass through the narrowed opening of the cut-out in the safety bracket, adjacent the pivotal connection of the stay arm with the mounting bracket, movement of the stay arm from the first open position to the second position, in which the wing part of the window or door is released for opening beyond the ventilation range, will only be possible with the wing part very near its closed position with respect to the main frame part. Nevertheless, practical experience has shown that due to the fact that, for easy operation in respect of engagement with and disengagement from the safety bracket, the narrowed section of the stay arm must have a certain minimum length, it is not entirely impossible to operate the stay arm by inserting a rigid or semi-rigid tool through a slightly open window or door to engage the stay arm in the direction of release from the safety bracket, whereby movement of the stay arm to the second position may become possible by moving the wing part in the closing direction from the slightly open position, in which the tool has been introduced. This risk may increase, of course, if the mounting and safety brackets of this safety device, which is commonly sold directly to house owners for self-installation, are not positioned on and secured to the wing and main frame parts of the window with the accuracy recommended by the manufacturer.

[0008] On this background, it is the object of the invention to provide an improved solution with respect to the latter prior art device, by means of which unauthorized access through a slightly open window or door will become impossible without complete destruction of the safety device itself.

[0009] In accordance with the invention this object is accomplished by means of an anti-burglary safety device of the above-mentioned prior design of the applicant, as recited in the preamble of claim, which is characterized in that a locking arm is pivotally connected at one end with the narrowed section of the stay arm at a separation from the pivotal connection of the stay arm with the mounting bracket to allow pivotal movement of the locking arm from a locking position, in which it overlaps said narrowed section to prevent passage thereof through the narrowed opening of the cut-out in the safety bracket, to an inoperative position, in which it is moved away from the narrowed section to allow said passage, the locking arm being provided with engagement means for engagement with the projecting bearing member of the mounting bracket to prevent said pivotal movement of the locking arm in said first position of the stay arm.

[0010] Preferred and advantageous embodiments of the safety device according to the invention are stated in the dependent claims.

[0011] In the following the invention will be explained in further detail with reference to the accompanying drawings, in which

Figs. 1 and 2 show two variants of the safety device according to the applicant's prior design,

Fig. 3 is a side view of the stay arm in any of figs. 1 and 2 in a released position disengaged from the safety bracket,

Fig. 4 is a schematic plan view of the safety bracket of a device as shown in figs 1 or 2,

Figs. 5 and 6 are perspective views of a preferred embodiment of a safety device according to the invention in its activated secure position and a released position, respectively, and

Figs. 7 to 9 are side views of the stay arm with its mounting bracket in the safety device in figs. 5 and 6.

[0012] Fig. 1 shows the applicant's prior safety device in a version mainly intended for a window or door having wing and main frame parts 1 and 2 typically composed of wood, plastics or aluminium profiles, the window or door being opened by turning the wing part 1 in the direction outwards from the main frame part 2.

[0013] The constituent parts of the safety device are typically made of metal like steel or aluminium, but could alternatively be made by injection moulding of a solid hard, possibly reinforced plastics material, and comprises a stay arm 3 in connection with a mounting bracket 4, which is secured safely to a surface of the wing part 1 parallel to the glazing layer thereof, and an angular safety bracket 5 having legs 6 and 7 at right angles to each other, one of which is safely secured to a surface of the main frame part 2 generally at right angles to glazing layer of the wing part 1.

[0014] To prevent disconnection from the window profiles after completed installation the mounting and safety brackets may, as recommended by the manufacturer, be secured to their respective parts of the window or door by one-way screws, which after tightening can only be removed by destructive removal of the surrounding part of the wing and main frame profiles.

[0015] As shown in fig. 4 the other leg 7 of the safety bracket 5 is formed with a dovetailed cut-out 8 having a narrowed opening 9 and an enlargement 10 for accommodation of the stay arm 3, so that the stay arm will be longitudinally displaceable through the enlargement 10 to permit opening of the wing part 1 with respect to the main frame part 2 within a ventilation range limited by a bent end part 11 forming a stop member at one end of the stay arm 3.

[0016] Over the major part of its length the stay arm 3 has a generally circular cross-section and the enlargement 10 of the cut-out 8 in the safety bracket 5 has a cross-section allowing easy sliding displacement of the stay arm 3 through the enlargement.

[0017] As further apparent from fig. 4 the enlargement 10 may have a substantially linear lower edge 12 which can be engaged by any of a number of incisions 12a, shown in fig. 3, forming discrete local engagement points distributed along the length of the stay arm 3, whereby the longitudinal position of the stay arm 3 can be adjusted to a number of ventilation positions within the ventilation range. It will be appreciated, however that the engagement means provided by the safety bracket and the stay arm may be of many different forms.

[0018] In its other end remote from the bent end part 11 the stay arm 3 is pivotally connected with a bearing member 13 projecting from the mounting bracket 4. More in detail the stay arm 3 is formed in this end with a relatively short narrowed, e.g. relatively flat brick-like section 14 having a width less than the width of the narrowed opening 9 of the cut-out 8 in the safety bracket 5. The bearing member 13 projecting from the mounting bracket 4 is bifurcated with arms 15, between which the narrowed section 14 of the stay member 3 is interleaved for pivotal movement in a plane perpendicular to the plane of the drawing about a pivot axis 16 provided by a shaft or pin member not illustrated.

[0019] In the version shown in fig. 2, which is mainly intended for a window or door, which is opened by inwards movement of the wing part 1' with respect to the main frame part 2', the main deviation from the version in fig 1 is that the stay arm 3' with its mounting bracket 4' and the safety bracket 5' have been reversed, such that the mounting bracket 4' and the safety bracket 5' are secured to surfaces of the main frame part 2' and wing part 1', respectively, located in a common plane parallel to the glazing layer of the wing part 1'. Due to this geometrical difference the legs 6' and 7' of the safety bracket 5' are also parallel to, but separated from each other. In other aspects, the version illustrated in fig. 2 is similar to the version shown in fig. 1.

[0020] As the narrowed end section 14, which is the only part of the stay arm 3 that can pass through the narrowed opening 9 of the cut-out 8 in the safety member 5, is disposed adjacent to the pivotal connection of the stay arm 3 with the projecting bearing member 13, it will be appreciated that only with the narrowed section 14 positioned in the enlargement 19 of the safety bracket 5, i.e. with the wing part 1 in a position very near to its closed position with respect to the main frame part 2, may the stay arm 3 be released from its accommodation within the enlargement 10 of the cut-out 8 in the safety bracket 5 to allow disengagement of the stay arm 3 from the safety bracket 5 by turning the stay arm 3 to the upright substantially vertical position shown in fig. 3, in which the stay arm 3 may be retained in a holder member 17 secured to the main frame part 2 or the wing part 1 according to the actual version.

[0021] In actual use of the safety device shown in figs. 1 and 2 it has appeared, however, that it is not entirely impossible to gain access through a window slightly opened to a ventilation position by introduction of a thin rigid instrument between the wing part 1 and the main frame 2 to engage the stay arm of the safety device, which may then by inwards pushing of the wing part be disengaged from the safety bracket and thereby allow the wing part to be opened sufficiently for an intruder.

[0022] To eliminate this risk the safety device according to the invention, of which a preferred embodiment is shown in figs. 5 to 9, provides an active locking of the stay arm 103 in its operative first position by means of a locking arm 117, which in a locking position as shown in fig. 5 overlaps the narrowed section 114 of the stay arm 103 on both sides and thereby prevent passage of the narrowed section 114 through the narrowed opening 109 of the safety bracket 108.

[0023] At one end the locking arm 117 is pivotally connected by means of a pivot pin 118 with the narrowed section 114 of the stay arm at a separation from the pivotal connection of the stay arm 103 with the mounting bracket 104, that will allow pivotal movement of the locking arm 117 away from its locking position, but as shown in fig. 6 only after a 90° turning of the stay arm 103 in a direction opposite to the direction of the turning of the stay arm required for disengagement from the safety bracket 105.

[0024] As best seen in fig. 6 the locking arm 117 is a short generally cylindrical member matching the generally circular cross-section of the stay arm 103. For accommodation of the pivotal connection with the narrowed section 114 of the stay arm 103 and for accommodation of the narrowed section 114 in the locking position a slit 119 is formed through the length of the locking arm 117, At its pivotal connection with the narrowed section 114 the locking arm 117 is intersected by the slit 119, whereas over the remaining length of the locking arm 117 the slit 119 may extend to a depth of about 60 to 70 % of the diameter of the locking arm. For interleaved aligned accommodation in the slit 119 in the locking position shown in fig. 5 the narrowed section 114 of the stay arm 103 may be formed in its upper side with a depression 120.

[0025] In the first operative position of the stay arm 103 shown in fig. 5 the locking arm 117 is blocked against turning with respect to the stay arm 103 by a locking engagement between engagement means provided by the locking arm and the projecting bearing member 113 of the mounting bracket 104.

[0026] As shown in figs. 7 to 8 the engagement means for locking of the locking arm 117 in the first operative position of the stay arm 103 comprise, in the illustrated embodiment, substantially circular mating end faces 121 and 122 of the locking arm 117, on one hand, and the bifurcated arms 115 of projecting bearing member 113, on the other hand, said end faces having a common centre at the pivot axis 116 for the pivotal connection of between the stay arm 103 and the bearing member 113. It will be appreciated, however, that other forms of engagement means could easily be foreseen by a skilled person.

[0027] As will be appreciated, the turning of the stay arm 104 from the position shown in fig. 5 and 7 to the position shown in fig. 8, which is required for release of the locking arm will not be possible in the first operative position of the stay arm, in which either a part of the stay arm itself with the narrowed section 114 overlapped by the locking arm 117 or the projecting bearing member 113 of the mounting bracket 104 will be positioned in the enlargement 110 of the cut-out 108 in the safety bracket 105, and no passage of the locking arm 117 overlapping the narrowed section 114 through the narrowed opening 109 of the cut-out 108 will be possible.

[0028] Thereby turning of the stay arm 103 to the position shown in figs. 8 and 9 for release of the locking arm will only be possible in the fully closed position of the wing part 101 with respect to the main frame part 102, in which the bearing member 113 of the mounting bracket 104 is positioned in the safety bracket 104, whereas the stay arm as a whole is outside the safety bracket. Evidently, in this closed position of the wing part it will not be possible to engage the stay arm by introduction of rigid instrument from the external side of the window or door.

[0029] For accommodation of the end face 121 by turning of the locking arm 117 together with the stay arm 103 to the position shown in fig. 8 the bifurcated arms 115 of the projecting bearing member 113 may be formed at its lower side with a substantially circular depression 123 having its centre at the pivot axis for the pivot pin 118.

Claims

1. An anti-burglary safety device for doors and windows, comprising a stay arm (103) and a safety bracket (105) adapted for mounting on one and the other of an openable wing part (101) and a stationary main frame part (102) of the door or window, respectively, the safety bracket (105) being formed with a dovetailed cut-out (108) having a narrowed opening (109) and an enlargement (110) for accommodation of the stay arm (103) to be longitudinally displaceable within the enlargement (110) to permit opening of said wing part (110) within a ventilation range limited by a stop member (111) provided at one end of the stay arm (103), the stay arm (103) having adjacent its other end a narrowed section (114) allowing passage of said section through the narrowed opening (109) of the cut-out (108) in the safety bracket (105) and being pivotally connected (116), at said other end, with a projecting bearing member (113) of a mounting bracket (104) adapted to be secured to said one of the wing and main frame parts (101,102) to allow pivotal movement of the stay arm (103) from a first position, in which it projects from the mounting bracket (104) and substantially aligned therewith through the enlargement (110) of the cut-out (198) in the safety bracket (105) and a second position substantially at right angles to said first position, by passage of said narrowed section (114) of the stay arm (103) through the narrowed opening (109) of the cut-out (108) in

the safety bracket (105),
characterized in that a locking arm (117) is pivotally connected (118) at one end with the narrowed section (114) of the stay arm (103) at a separation from the pivotal connection (116) of the stay arm (103) with the mounting bracket (104) to allow pivotal movement of the locking arm (117) from a locking position, in which it overlaps said narrowed section (114) to prevent passage thereof through the narrowed opening (109) of the cut-out (108) in the safety bracket (105), to an inoperative position, in which it is moved away from the narrowed section (114) to allow said passage, the locking arm (117) being provided with engagement means (121) for engagement with the projecting bearing member (113) of the mounting bracket (105) to prevent said pivotal movement of the locking arm (117) in said first position of the stay arm (103).

2. A safety device as claimed in claim 1, **characterized in that** said engagement means of the locking arm (117) comprises an end face (121) thereof matching an engagement face (122) provided by an end edge of said projecting bearing member (113) of the mounting bracket (104).

3. A safety device as claimed in claim 2, **characterized in that** said end face (121) of the locking arm (117) and said engagement face (122) of said projecting bearing member (113) are substantially circular with a common centre at the pivot axis (116) for the pivotal connection between the stay arm (103) and said bearing member (113).

4. A safety device as claimed in claim 3, **characterized in that** at one side thereof said projecting bearing member (114) is formed with a substantially circular depression (123) having its centre at the pivot axis (118) for the pivotal connection between the locking arm (117) and the stay arm (103).

5. A safety device as claimed in any of claims 1 to 4, **characterized in that** the mounting bracket (4) for the stay arm (3) and the safety bracket (5) are adapted for connection with the openable wing part (1) and the main frame part (2), respectively, of the door or window, the safety bracket (5) comprising an angular bracket member with first and second legs (6,7) substantially at right angles to each other.

6. A safety device as claimed in any of claims 1 to 4, **characterized in that** the mounting bracket (4') for the stay arm (3') and the safety bracket (5') are adapted for connection with the main frame part (2') and the openable wing part (1'), respectively, of the door or window, the safety bracket (5') comprising substantially parallel legs (6',7').

7. A safety device as claimed in any of claims 1 to 6, **characterized in that** a holder member (17) is provided to be secured to the same of said wind and frame parts (1,2) as the mounting bracket (4) to hold said stay arm (3) in said second position to allow opening of the wing part (1) beyond said limited ventilation range.

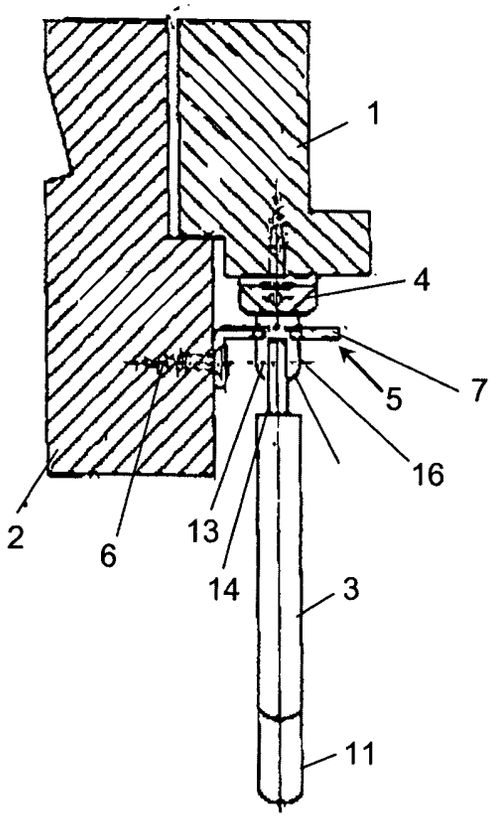


FIG. 1
(PRIOR ART)

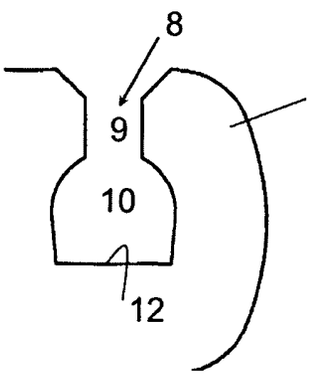


FIG. 4
(PRIOR ART)

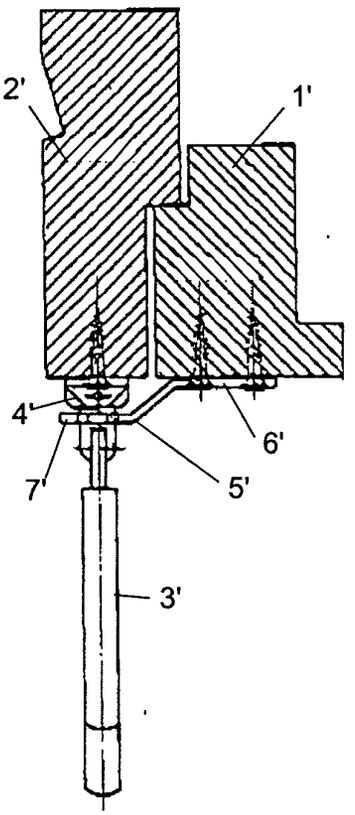


FIG. 2
(PRIOR ART)

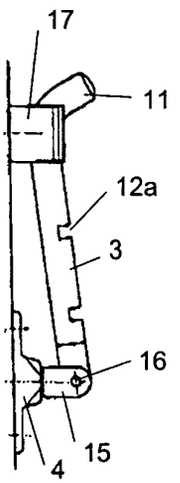
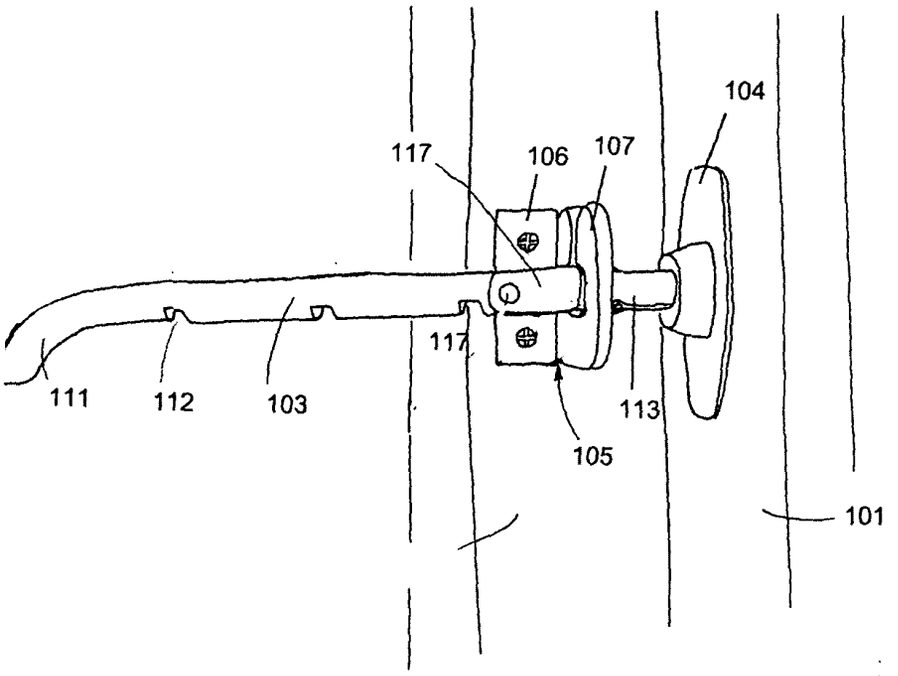


FIG. 3 (PRIOR ART)


104
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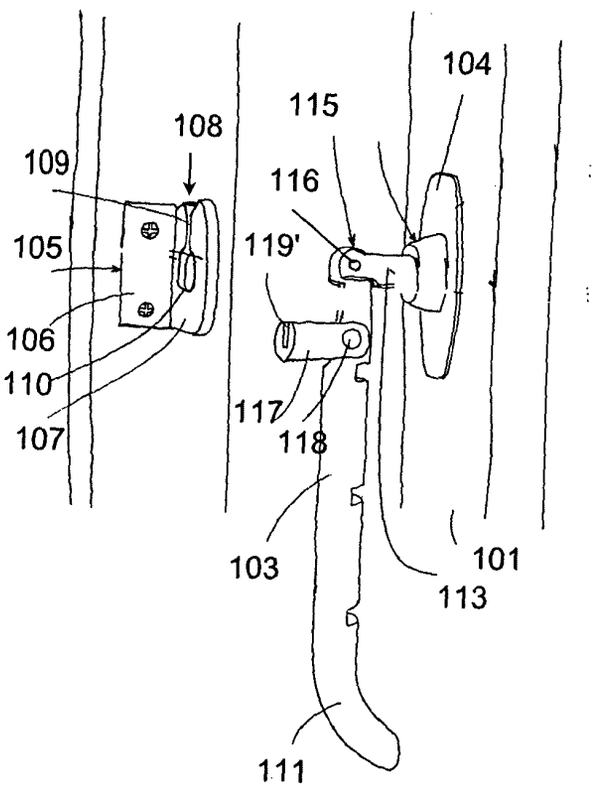
101

FIG. 5


104
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119'
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FIG. 6

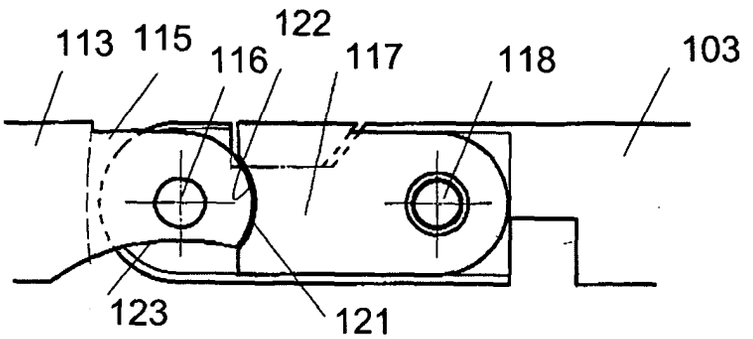

FIG. 7

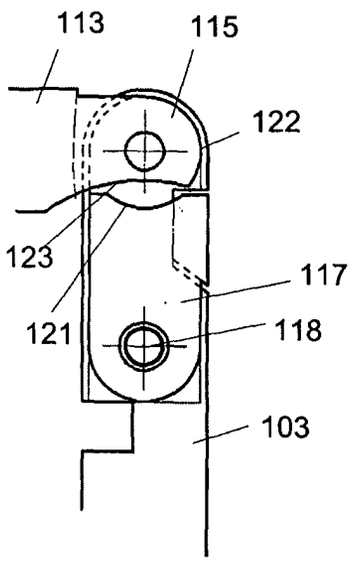

FIG. 8

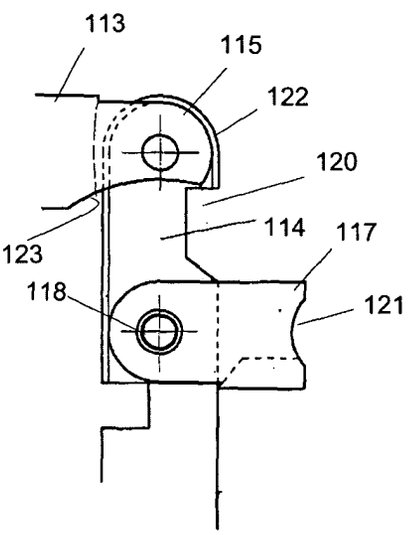

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 03 38 8071

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	GB 07082 A A.D. 1911 (RALPH JOHN SEAGER SMITH) 21 March 1912 (1912-03-21) * page 2, line 35 - line 50; figures 1-3 *	1,6	
A	GB 171 731 A (SAMUEL TIMINGS) 1 December 1921 (1921-12-01) * the whole document *	1,6	
A	GB 257 129 A (PARKER WINDER & ACHURCH LTD;JOHN AARON WOOD) 26 August 1926 (1926-08-26) * figure 1 *	5	
A	GB 226 054 A (WILLIAM HENRY TONKS; WALTER SPARKS) 18 December 1924 (1924-12-18) * figures 1-3 *	7	TECHNICAL FIELDS SEARCHED (Int.Cl.7) E05C
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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	21 April 2004	PEREZ MENDEZ, J

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 38 8071

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21-04-2004

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82