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(54) **SLIP BOLT, ESPECIALLY FOR ROTATING ROOF WINDOWS**

GLEITRIEGEL, INSBESONDERE FÜR DREHBARE DACHFENSTER

TARGETTE DE BLOCAGE, NOTAMMENT POUR FENÊTRES DE TOIT PIVOTANTES

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Description

[0001] The subject of the invention is a slip bolt, especially for rotating roof windows, fixing the window sash raised by about 150° in the window frame.

[0002] A slip bolt according to the preamble of claim 1 is disclosed in document GB 2042052A.

[0003] There is a known slip bolt applied in wooden VELUX roof windows. This slip bolt consists of a guide and a locking element sliding in it. The guide has the form of a much elongated metal tube with rectangular cross section. At one end of the guide, in its upper wall, is a crosswise stamped recess at the side of which is a rectangular hole the width of which is equal to the width of the wall and the length close to half of the length of the guide. At the opposite end of the guide, in its upper wall, is an oval opening. In the bottom wall of the guide, close to its both ends, are two circular holes for the fixing screws; these holes are accessible through the upper wall, by the rectangular and the oval hole respectively.

[0004] The locking element consists of a square rod of plastics, which at one end is fitted with a catch fastener and an operating element consisting of a pin serving to slide the locking element, while at the opposite end it has a locking end-piece. The fastener operates in conjunction with the crosswise stamped recess in the guide, and the locking end-piece, upon sliding it out of the guide, fits into the corresponding hole in the window frame.

[0005] The locking element is sliding in the guide so, that the pin protrudes out of the rectangular opening in the upper wall of the guide, which limits the travel of the pin and by the same the range of the stroke of the locking element. When the pin finds itself at the edge of the rectangular hole close to the stamped recess, then the locking end-piece is inside the guide and the catch is in the stamped recess, preventing free movement of the locking element. When the pin is being moved to the opposite edge of the hole in the guide, then the catch is outside the stamped recess and the locking end-piece protrudes out of the guide.

[0006] The slip bolt is being set into the upper corners of the window frame in a special recess and is being fixed by screws to the bottom of the recess. Upon turning the window by about 150°, the locking end-piece protruding out of the guide enters into a hole in the side element of the window frame, locking the window sash in respect to the window frame.

[0007] The construction of the bolt, its required strength, and also the method of its fitting and fixing in the window sash frame determine its length. Such a slip bolt cannot be applied, e.g., on windows made of multi-chamber profiles, lacking a supporting surface for the bottom wall of the guide, which is also indispensable to fix the slip bolt with screws, and cutting out such a long opening in the external surface of the multi-chamber element of the window frame would affect unfavorably the strength parameters of the frame and facilitate a deformation the frame elements.

[0008] The slip bolt according the invention as defined in claim 1 consists of a guide having the form of a short sleeve, advantageously of a rectangular cross-section, and of a locking element sliding in it within a limited stroke.

5 The locking element is provided with frictional and catching elements, which prevent its spontaneous shifting. The guide is provided on its both ends, at the opposite upper and bottom walls, with longitudinal cut-outs open on one side towards the opposite ends of the guide.

10 **[0009]** The form of the cross-section of the locking element conforms to the inner cross-section of the guide; the element ends on one side with a locking end-piece, and at the opposite end it is provided with a stop, while at central part of the upper wall there is an operating element serving to slide the locking element. The locking element slides within the guide so that the operating element fits into the longitudinal cut-out in the upper wall of the guide limiting the stroke of the locking element in one direction, and the abutment operates in conjunction with longitudinal cut-out in the bottom wall of the guide limiting the sliding range of the element in the opposite direction. The cut-out in the upper wall of the guide is located at that end of the guide, out of which the locking element slides out. The locking element is fitted with elastic braking-and-catching elements, which protect it against spontaneous sliding out of the guide.

[0010] The construction described above makes it possible to shorten considerably the length of the slip bolt, at the same time fully keeping its strength parameters and practical values. Further, depending on the design alternative of the guide, the slip bolt can be applied in rotating roof windows made of plastics or of wood.

[0011] The slip bolt according the invention is depicted in examples of execution in the drawing, in which Fig. 1, 2, 6, 7, 11, and 12 show the guide and the locking element in three versions of execution, Fig. 3, 4, 8, 9, 13, and 14 show the top view and the bottom view in three versions of execution, and Fig. 5, 10 and 15 show the fitting of the slip bolt in window sash frame made of multi-chamber elements and of wood.

Example I

[0012] The slip bolt consists of the guide 1 and the locking element 2, sliding in the guide 1.

45 The guide 1 has the form of a short sleeve with a rectangular cross section, the upper wall of which is longer than the other walls and wider than the bottom wall so that it protrudes on both sides outside the side walls, and on one end of the guide 1, forming the longitudinal abutment flange 3. At the other end of the guide 1 there is the transverse abutment flange 4, which is integral with the side walls and the bottom wall of the guide 1 and the longitudinal flange 3, to which it is perpendicular. The transversal abutment flange 4, in its part connected with the bottom flange of the guide 1, has a hole 5 for the for the fixing screw.

[0013] In the upper wall of the guide 1 there is a rec-

tangular longitudinal cut-out 6, which is on one side open at the side of the transversal abutment flange 4; the length of the cut-out is about half the length of the guide 1 and the width less than the distance between the inner surfaces of the side walls. On the opposite end of the guide 1, in the w bottom wall, there is a longitudinal cut-out 7, which is a mirror reflection of the cut-out 6. Along the external surfaces of the side walls of the guide 1, below the longitudinal abutment flange 3, are longitudinal guiding and fixing strips 8.

[0014] The locking element 2 is a rectangular rod the external dimensions of which correspond to the internal dimensions of the guide 1, having on one end the stopping end-piece 9 and on the other end two catches 10 and the end-stop 11 located between the catches 10, which are springing and are arranged at the back of the bottom wall. In the central part of the upper surface of the locking element 2, there is a operating element consisting of a recess 12 with the stop 13 at the transverse edge of the recess 12 closer to the stop 11.

[0015] The locking element 2 is being inserted lengthwise into the guide 1 from the side of the transversal abutment flange 4, flexing the elastic catches 10 and the end-stop 11. The stopping end-piece 9 is facing towards the transverse abutment flange 4, the recess 12 is accessible through the cut-out 6 in the upper wall of the guide 1, and the end-stop 11 is located in the cut-out 7 in the bottom wall of the guide 1. The catches 10 operate in conjunction with the inner surfaces of the side walls of the guide 1 and their edges 14.

The shifting range of the locking element 2 towards the transverse abutment flange 4 is limited by the length of the cut-out 7 and the end-stop 11, while in the opposite direction it is limited by the length of the cut-out 6 and the recess 12 with the stop 13.

[0016] The slip bolt is being located in the edge recess of the upper multi-chamber element of the frame of the window sash. The slip bolt is inserted so that edge of the recess in the external wall of the window sash frame slides between the longitudinal abutment flange 3 and the longitudinal guiding and fixing strips 8 of the guide 1, until the transverse abutment flange 4 rests on the wall of the side element of the frame. The longitudinal abutment flange 3 and the longitudinal guiding and fixing strips 8 stabilize the position of the locking bolt in respect of the external surface of the frame. Screwing down the transverse abutment flange 4 through the fixing screw hole 5 secures the slip bolt from sliding out of the recess in the sash frame.

[0017] When the end-stop 13 rests on the transverse edge of the cut-out 6, the stopping end-piece 9 is located inside the guide 1, and the two catches 10 resiliently deflect sidewise and catch the edges 14 of the side walls guide 1 preventing spontaneous outward movement of the locking element 2. The window sash can be rotated freely in the window frame.

[0018] In order to stop the window sash turned about 150° one has to slide the recess 12 towards the trans-

verse abutment flange 4. The end-stop 11 comes up to the transverse edge of the cut-out 7 in the bottom wall of the guide 1, the catches 10 slide on the edge 14 of the side walls of the guide 1, and the stopping end-piece 9 protrudes of the z guide 1, entering into the hole in the side element of the window frame. The window sash is then fully stopped.

Example II

[0019] The slip bolt consists of the guide 1 and the locking element 2, sliding in the guide 1.

The guide 1 has the form of a short sleeve with rectangular cross section, the upper wall of which is longer than the other walls and wider than the bottom wall so that it protrudes on both sides outside the side walls, and on one end of the guide 1, forming the longitudinal abutment flange 3. At the other end of the guide 1 there is the transverse abutment flange 4, which is integral with the side walls and the bottom wall of the guide 1, and the longitudinal flange 3, to which it is perpendicular. The transversal abutment flange 4, in its part connected with the bottom flange of the guide 1, has a hole 5 for the for the fixing screw.

[0020] In the upper wall of the guide 1 there is a rectangular longitudinal recess 6, which is on one end open at the side of the transversal abutment flange 4, the length of which is about half the length of the guide 1 and the width less than the distance between the inner surfaces of the side walls. On the opposite end of the guide 1, at the prolongation of the side walls, slightly below the flange 3, are located the fixing elements 8, and in the bottom wall there is a longitudinal cut-out 7, which mirrors the cut-out 6.

[0021] The locking element 2 is a rectangular rod the external dimensions of which correspond to the internal dimensions of the guide 1, having on end the stopping end-piece 9 and on the other end two catches 10 and the end-stop 11 located between the catches 10, which are springing and are arranged along the back of the bottom wall. In the central part of the upper surface of the locking element 2, there is the operating element consisting of a boss 12.

[0022] The locking element 2 is being inserted lengthwise into the guide 1 from the side of the transversal abutment flange 4, upon deflecting the catch 10 and the end-stop 11. The stopping end-piece 9 faces the transverse abutment flange 4, the boss 12 is being slid into the cut-out 6 in the upper wall of the guide 1 and the end-stop 11 into the cut-out 7 in the bottom wall of the guide 1. The catches 10 operate in conjunction with the inner surfaces of the guide 1 and their edges 14.

[0023] The sliding range of the locking element 2 in direction of the transverse abutment flange 4 is limited by the length of the cut-out 7 and the end-stop 11, and in the opposite direction by the length of the cut-out 6 and the boss 12.

[0024] The slip bolt is being located in the edge recess

of the upper multi-chamber element of the frame of the window sash. The longitudinal abutment flange 3 constitutes the resting surface which slides along the cut-out on the external surface of the frame of the sash until the fixing strips 8 of the guide 1 get under the transverse edge of the cut-out in frame of the sash, fixing the locking bolt from that side, and at the same time the transverse abutment flange 4 abuts on the wall of the side element of the sash. Screwing down the transverse abutment flange 4, through the fixing screw hole 5, secures the slip bolt from sliding out of the recess in the sash frame.

[0025] When the boss 12 is most distant from the transverse abutment flange 4, the stopping end-piece 9 is inside the guide 1, and the two catches 10 spring aside and catch the edges 14 of the side walls of the guide 1, preventing spontaneous shifting of the locking element 2. The window sash can be rotated freely in the window frame.

[0026] In order to stop the turned window sash one has to slide the boss 12 towards the transverse abutment flange 4. The end-stop 11 comes up to the transverse edge of the cut-out 7 in the bottom wall of the guide 1, the catches 10 slide on the edge 14 of the side walls of the guide 1, and the stopping end-piece 9 protrudes of the z guide 1, entering into the hole in the side element of the window frame. The window sash is then fully stopped.

Example III

[0027] The slip bolt consists of the guide 1 and the locking element 2, sliding in the guide 1.

The guide 1 has the form of a short sleeve with rectangular cross section. On one end of the guide 1, in its upper wall, there is a rectangular, longitudinal cut-out 6 of a length close to half the length of the guide 1 and a width less than the spacing between the inner surfaces of the side walls, which is open on one end, facing the transverse edge of the wall; in the bottom wall there are the fixing screw holes 15, which are accessible through the cut-out 6 in the upper wall. At the opposite end of the guide 1, the upper wall, which longer than the other walls, protrudes outside the side walls and the bottom wall. In the bottom wall there is a longitudinal cut-out 7 being a mirror reflection of the cut out 6.

[0028] The locking element 2 is a rectangular rod, the external dimensions of which correspond to the internal dimensions of the guide 1, having on one end the stopping end-piece 9 and on the other end the two catches 10 and the end-stop 11 located between the catches 10, which are springing and are arranged along the back of the bottom wall. In the central part of the upper surface of the locking element 2, there is the operating element consisting of a boss 12.

The guide 1 is being placed in the edge recess in the upper element of the wooden frame of the window sash so that the cut-out 6 in the upper wall finds itself at the corner of the frame and is fixed to the bottom of the recess

with screws through the holes 15, which are accessible through the cut-out 6. Then the locking element 2 is to be inserted lengthwise into the guide 1 from the side of the cut-out 6 in the upper wall having deflected the catches 10 and the end-stop 11. The boss 12 is inserted into the cut-out 6 in the upper wall of the guide 1, and the end-stop 11 in the cut-out 7 in the bottom wall of the guide 1. The catches 10 operate in conjunction with the inner walls of the side walls of the guide 1 and their transversal edges 14. The range of the stroke of the locking element 2 when sliding out the stopping end-piece 9 is limited by the length of the cut-out 7 and the end-stop 11, and in the opposite direction by the length of the cut-out 6 and the boss 12.

[0029] When the boss 12 is close to the transverse edge of the cut-out 6, the stopping end-piece 9 is inside the guide 1 and the two catches 10, spring aside and catch the edges 14 of the side walls of the guide 1, preventing spontaneous shifting of the locking element 2. The window sash can be rotated freely in the window frame.

[0030] In order to stop the window sash turned by about 150° one has to slide the boss 12 towards the transverse edge of the cut-out 6. The end-stop 11 comes up to the transverse edge of the cut-out 7 in the bottom wall of the guide 1, the catches 10 slide on the edge 14 of the side walls of the guide 1, and the stopping end-piece 9 protrudes of the z guide 1, entering into the hole in the side element of the window frame. The window sash is then fully stopped.

Claims

1. Slip bolt, especially for rotating roof windows, consisting of a guide and a locking element fitted inside it with a limited sliding range, which is protected against spontaneous coming out of its blocking end-piece from the guide, **characterized in that** the guide (1) has on one end in its upper wall a longitudinal cut-out (6) of a length equal to about half length of the guide (1) and a width less than the spacing between the inner surfaces of the side walls, which is open on the end at the transverse edge, and at the other end has in the bottom wall a longitudinal cut-out (7), which is open on one side in the opposite direction than the cut-out (6), advantageously being a mirror reflection of the cut-out (6), while the locking element (2) has on one end a stopping end-piece (9) and on the other end an end-stop (11), which operates in conjunction with the cut-out (7) in the bottom wall of the guide (1), and in the central part of the upper wall of the locking element (2) there is an operating element (12) operating in conjunction with the cut-out (6) in the upper wall of the guide (1), the locking element (2) in the guide (1) pointing with its stopping end-piece (9) in direction of the open end of the cut-out (6).

2. Slip bolt according to claim 1, **characterized in that** the locking element (2) has in the central part of its upper surface an operating element in form of a recess (12).
3. Slip bolt according to claim 1, **characterized in that** the locking element (2) has in the central part of its upper surface an operating element in form of a boss (12).
4. Slip bolt according to claim 1, **characterized in that** the locking element (2) has catches (10) set in the back surface, advantageously at both sides of the end-stop (11), which operate in conjunction with the inner surfaces walls of side walls of the guide (1) and their transverse edges (14).
5. Slip bolt according to claim 1, **characterized in that** the guide (1) has a longitudinal abutment flange (3), advantageously arranged in the plane of the upper wall, and the side walls of the guide (1) are fitted with fixing elements (8).
6. Slip bolt according to claim 5, **characterized in that** the fixing elements (8) are in form of guiding fixing strips arranged lengthwise along the external surfaces of the side walls of the guide (1), below the longitudinal abutment flange (3).
7. Slip bolt according to claim 5, **characterized in that** the fixing elements (8) are in form of fixing cogs arranged at the end of the guide (1) with the cut-out (7) in the bottom wall, on the extension of the side walls, slightly below the flange (3).
8. Slip bolt according to claim 1 **characterized in that** the guide (1), at its end with the cut-out (6) in the upper wall, has a transverse abutment flange (4) integral with the side walls and flange wall the guide (1).
9. Slip bolt according to claim 8, **characterized in that** the transverse abutment flange (4), in its part connected with the bottom wall of the guide (1), has a hole (5) for the fixing screw.

Patentansprüche

1. Gleitriegel, insbesondere für Dachdrehfenster, bestehend aus einer Führung und einem darin eingesetzten Sperrelement mit eingeschränktem Verschiebespielraum, wobei der Riegel gegen selbständiges Herausrücken des Sperrbolzens aus der Führung gesichert ist, **dadurch gekennzeichnet, dass** die Führung (1) an einem Ende einen Längsausschnitt (6) an der oberen Wand hat, dessen Länge einer Hälfte der Länge der Führung (1) entspricht,

und dessen Breite kleiner als der Abstand zwischen den Innenoberflächen der Seitenwände ist, welcher von Seiten der Querkante einseitig geöffnet ist, und am zweiten Ende einen Längsausschnitt (7) an der unteren Wand besitzt, der in entgegen gesetzter Richtung als Ausschnitt (6) liegt, einseitig geöffnet ist und vorzugsweise einen Spiegelreflex des Ausschnittes (6) darstellt, das Sperrelement (2) hat an einem Ende einen Sperrbolzen (9) und am zweiten Ende einen Anschlag (11), der mit dem Ausschnitt (7) an der unteren Wand der Führung (1) zusammenwirkt, und in dem mittleren Teil der Wand des Sperrelementes (2) befindet sich ein Operationselement (12), das mit dem Ausschnitt (6) an der oberen Wand der Führung (1) zusammenwirkt, wobei der Sperrbolzen (9) des Sperrelementes (2) in der Führung (1) dem mit Ausschnitt (6) versehenen Ende der Führung zugekehrt ist.

2. Gleitriegel nach Anspruch 1, **dadurch gekennzeichnet, dass** das Sperrelement (2) in dem mittleren Teil seiner oberen Wand ein Operationselement in Form eines Einschnitts (12) besitzt.
3. Gleitriegel nach Anspruch 1, **dadurch gekennzeichnet, dass** das Sperrelement (2) in dem mittleren Teil seiner oberen Wand ein Operationselement in Form eines Verschiebeansatzes (12) besitzt.
4. Gleitriegel nach Anspruch 1, **dadurch gekennzeichnet, dass** das Sperrelement (2) Riegelsperren (10), die an der hinteren Wand vorzugsweise an beiden Seiten des Anschlags (11) angebracht sind, besitzt, welche mit den Außenoberflächen der Seitenwände der Führung (1) und deren Querkanten (14) zusammenwirken.
5. Gleitriegel nach Anspruch 1, **dadurch gekennzeichnet, dass** er einen entlang der Führung (1) verlaufenden Sperrflansch (3), der vorzugsweise an der Oberfläche der oberen Wand angebracht ist, besitzt, und die Seitenwände der Führung (1) mit Fixierelementen (8) versehen sind.
6. Gleitriegel nach Anspruch 5, **dadurch gekennzeichnet, dass** entlang den Außenflächen der Seitenwände der Führung (1) unterhalb des längs verlaufenden Sperrflansches (3) Führungs- und Fixierelemente (8) angebracht sind.
7. Gleitriegel nach Anspruch 7, **dadurch gekennzeichnet, dass** am Ende der Führung (1) mit Ausschnitt (7) in der unteren Wand jeweils an der Verlängerung der Seitenwände unterhalb des Flansches (3) Fixierelemente (8) angebracht sind.
8. Gleitriegel nach Anspruch 1, **dadurch gekennzeichnet, dass** die Führung (1) an ihrem mit dem

Ausschnitt (6) in der oberen Wand versehen Ende einen schräg gelegenen Sperrflansch (4), der mit den Seitenwänden und der unteren Wand der Führung (1) verbunden ist, besitzt.

9. Gleitriegel nach Anspruch 8, **dadurch gekennzeichnet, dass** der schräg gelegene Sperrflansch (4) in seinem mit der unteren Wand der Führung (1) verbundenen Teil eine Öffnung (5) für die Befestigungsschraube besitzt.

Revendications

1. La targette de blocage, notamment pour fenêtres de toit pivotantes, qui comprend le guide et, emboîté à l'intérieur de celui-ci, un élément de blocage dont la course est limitée, et la targette est protégée contre la sortie de l'extrémité de blocage du guide, **caractérisé par le fait que** le guide (1) possède, sur une extrémité, dans la paroi supérieure, un évidement longitudinal (6), dont la longueur est proche de la moitié de la longueur du guide (1) et dont la largeur est inférieure à la distance entre les surfaces extérieures des parois latérales, qui est ouvert d'un côté du côté de l'arête transversale, et, sur l'autre extrémité, dans la paroi inférieure, possède un évidement longitudinal (7), ouvert d'un seul côté dans le sens opposé à celui de l'évidement (6), qui constitue avantageusement le reflet de miroir de l'évidement (6), et l'élément de blocage (2) est terminé, d'un côté, par une extrémité de blocage (9), sur l'autre extrémité possède un butoir (11), qui coopère avec l'évidement (7) dans la paroi inférieure du guide (1), et dans la partie médiane de la paroi supérieure de l'élément de blocage (2) se trouve un élément opérationnel (12), qui coopère avec l'évidement (6) dans la paroi supérieure du guide (1), et l'élément de blocage (2) dans le guide (1) est dirigé par l'extrémité de blocage (9) dans le sens de l'extrémité avec l'évidement (6).
2. La targette selon la revendication 1, **caractérisé par le fait que** l'élément de blocage (2) possède dans la partie médiane de la paroi supérieure un élément opérationnel sous la forme d'un évidement (12).
3. La targette selon la revendication 1, **caractérisé par le fait que** l'élément de blocage (2) possède dans la partie médiane de la paroi supérieure un élément opérationnel sous la forme d'une tige (12).
4. La targette selon la revendication 1, **caractérisé par le fait que** l'élément de blocage (2) possède des butées (10) installées dans la paroi arrière, avantageusement de deux côtés du butoir (11), qui coopèrent avec les surfaces extérieures des parois latérales du guide (1) et avec leurs arêtes transversales

(14).

5. La targette selon la revendication 1, **caractérisé par le fait que** le guide (1) possède une bride d'assise latérale (3), avantageusement située dans la surface de la paroi supérieure, et les parois latérales du guide (1) sont munies d'éléments de fixation (8).
6. La targette, selon la revendication 5, **caractérisé par le fait que** le long des surfaces extérieures des parois latérales du guide (1), au-dessous de la bride d'assise latérale (3), se trouvent des saillies de guidage et de fixation (8).
7. La targette, selon la revendication 5, **caractérisé par le fait qu'à** l'extrémité du guide (1) avec l'évidement (7) dans la paroi inférieure, sur le prolongement des parois latérales, un peu au-dessous de la bride (3), se trouvent des éléments de fixation (8).
8. La targette, selon la revendication 1 **caractérisé par le fait que** le guide (1), sur son extrémité avec évidement (6) dans la paroi supérieure, possède une bride d'assise transversale (4) liée avec les parois latérales et la paroi inférieure du guide (1).
9. La targette, selon la revendication 8, **caractérisé par le fait que** la bride d'assise transversale (4), dans la partie liée à la paroi inférieure du guide (1), possède un orifice (5) pour la vis de fixation.

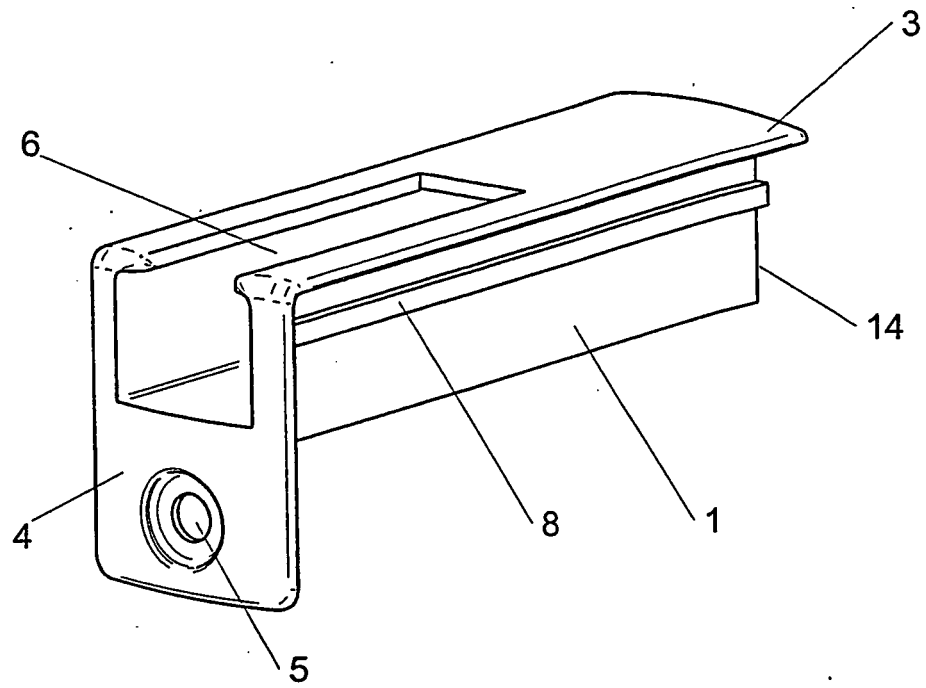


Fig. 1

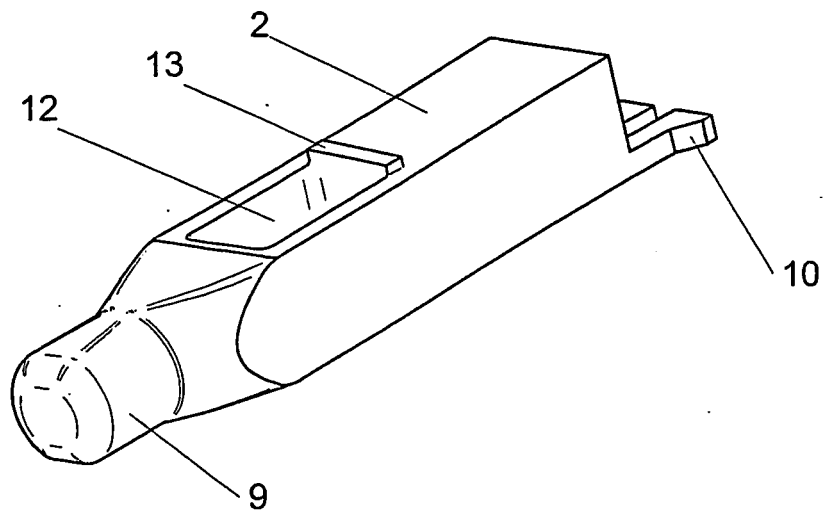


Fig. 2

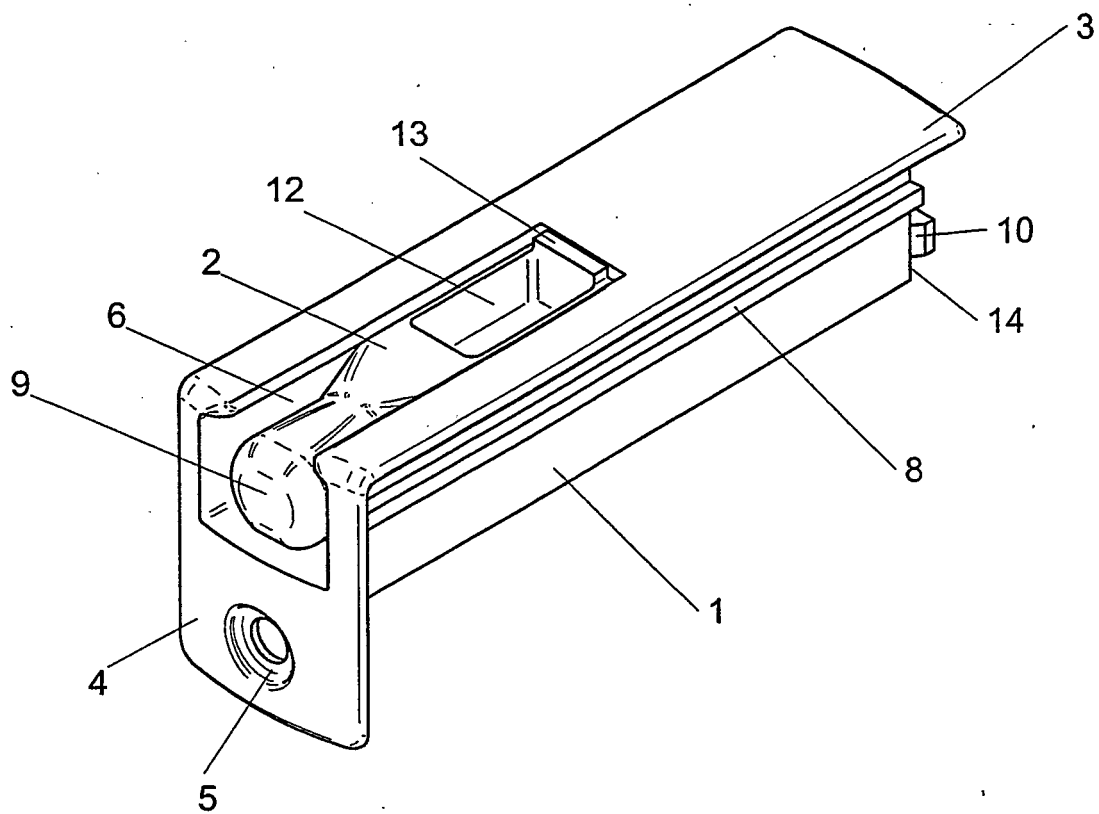


Fig. 3

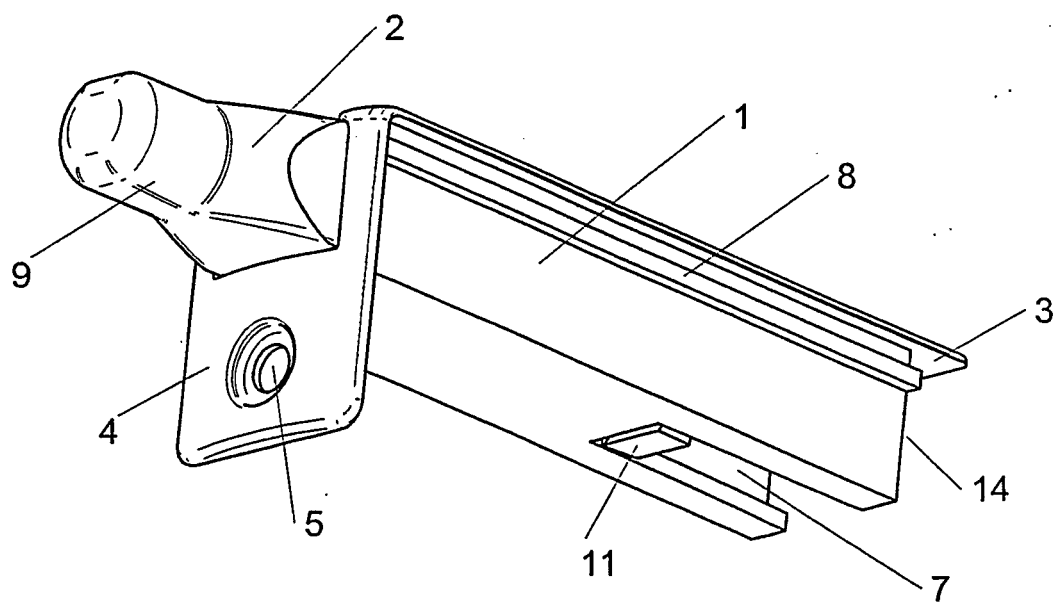


Fig. 4

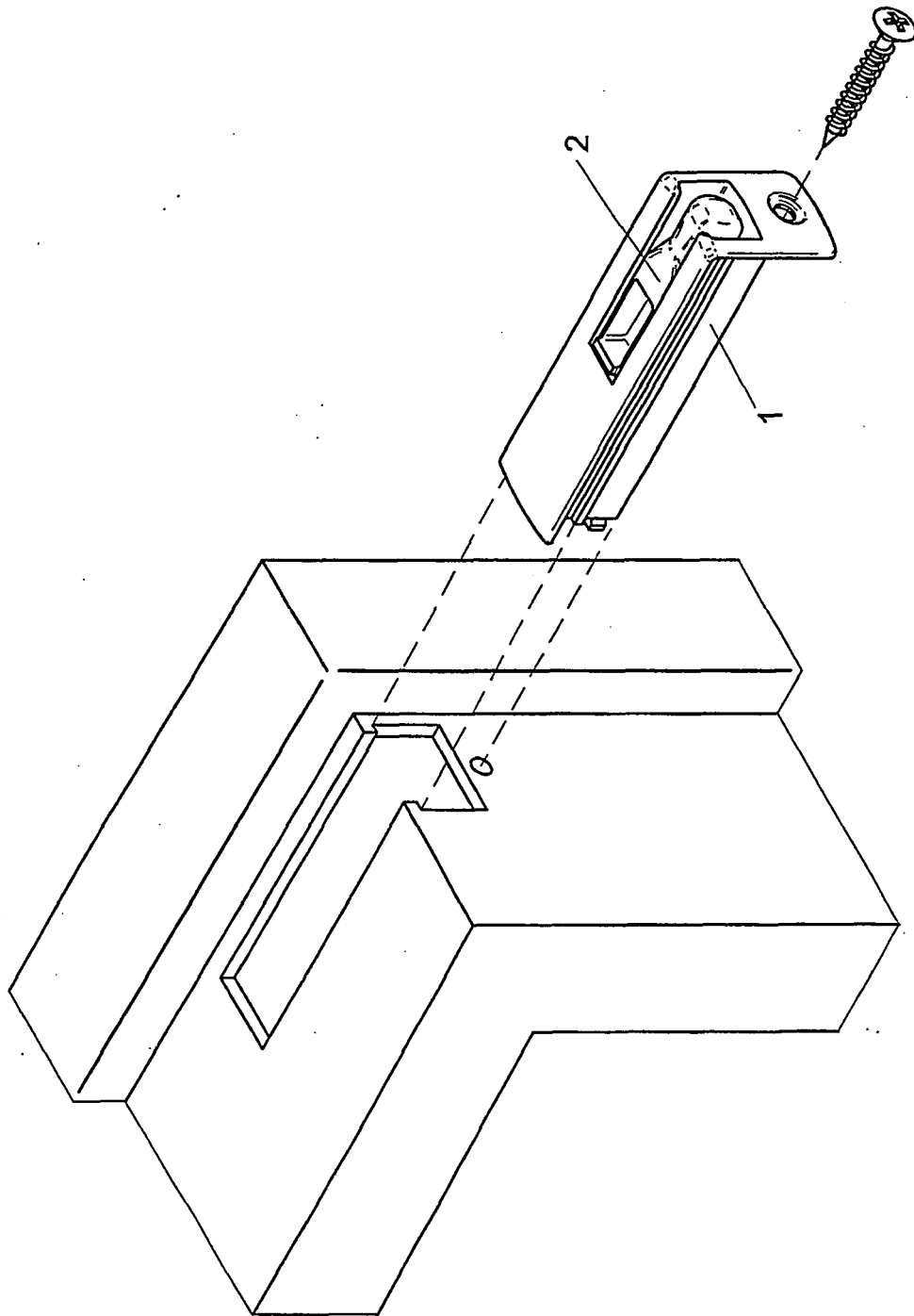


Fig. 5

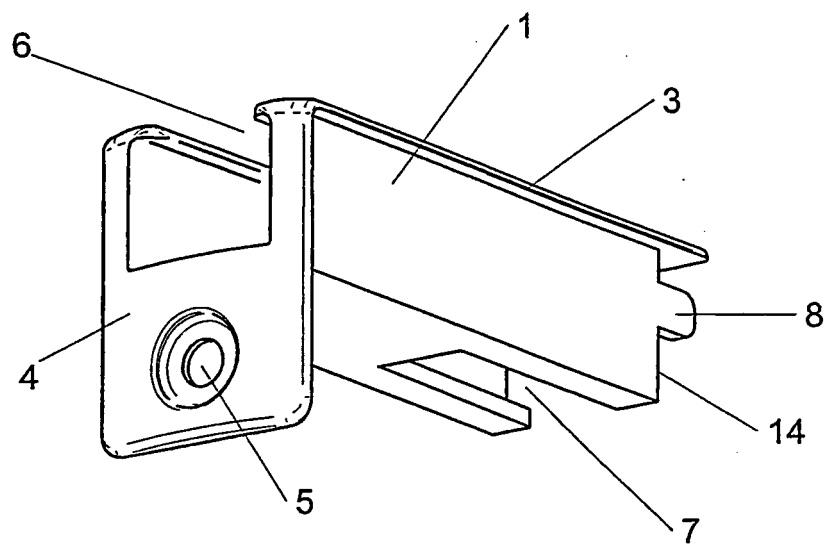


Fig. 6

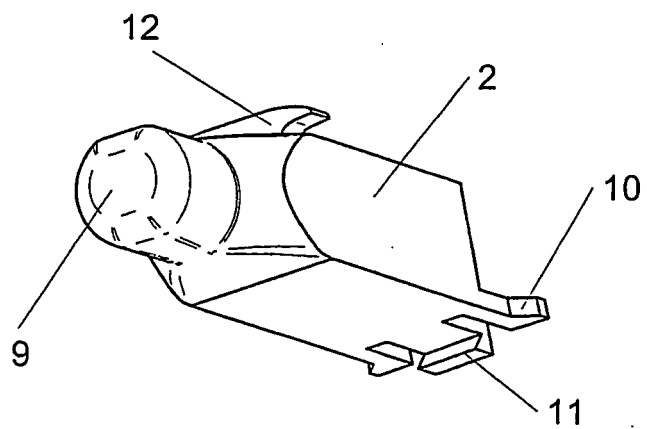


Fig. 7

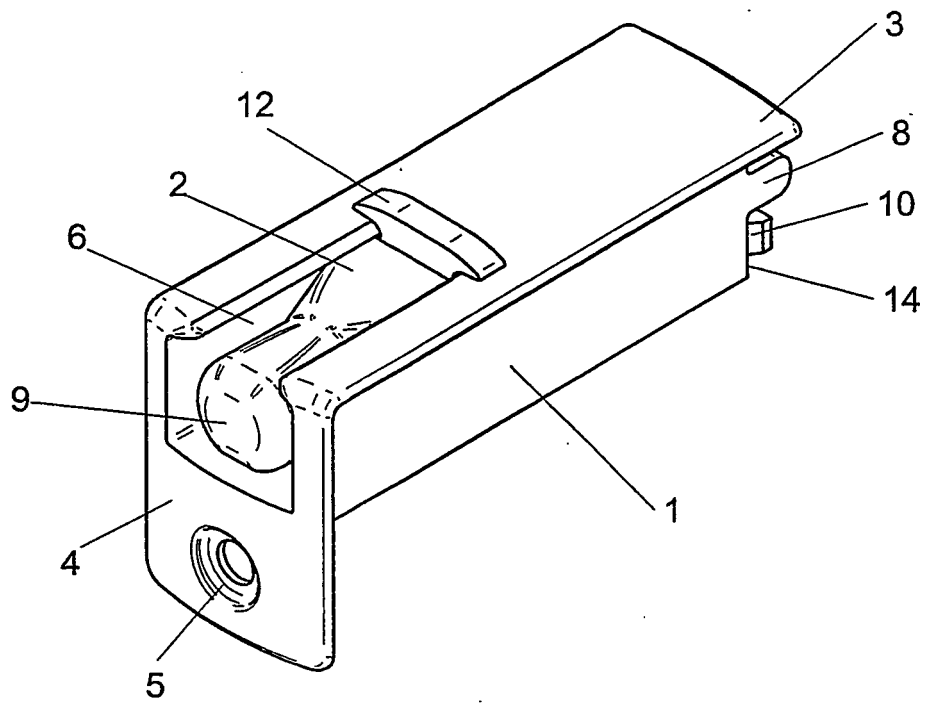


Fig. 8

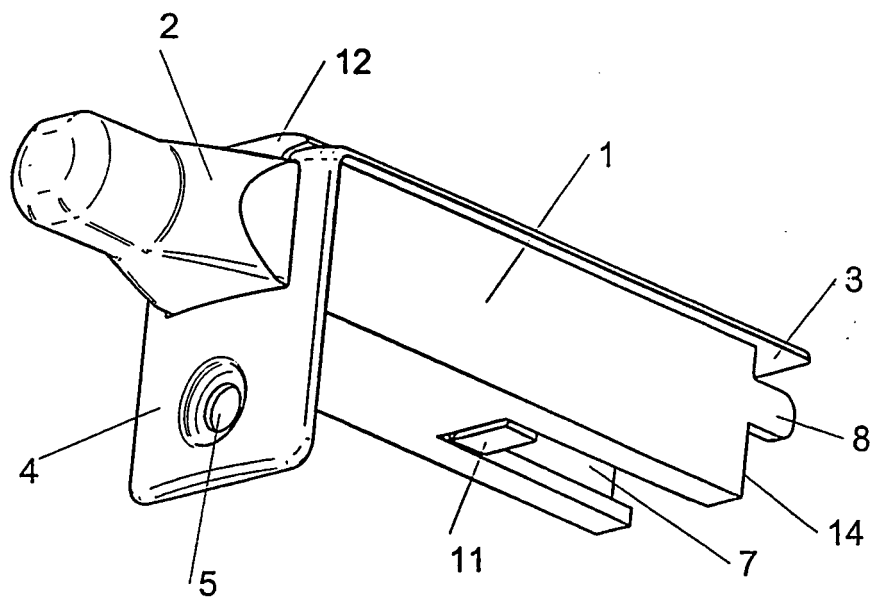


Fig. 9

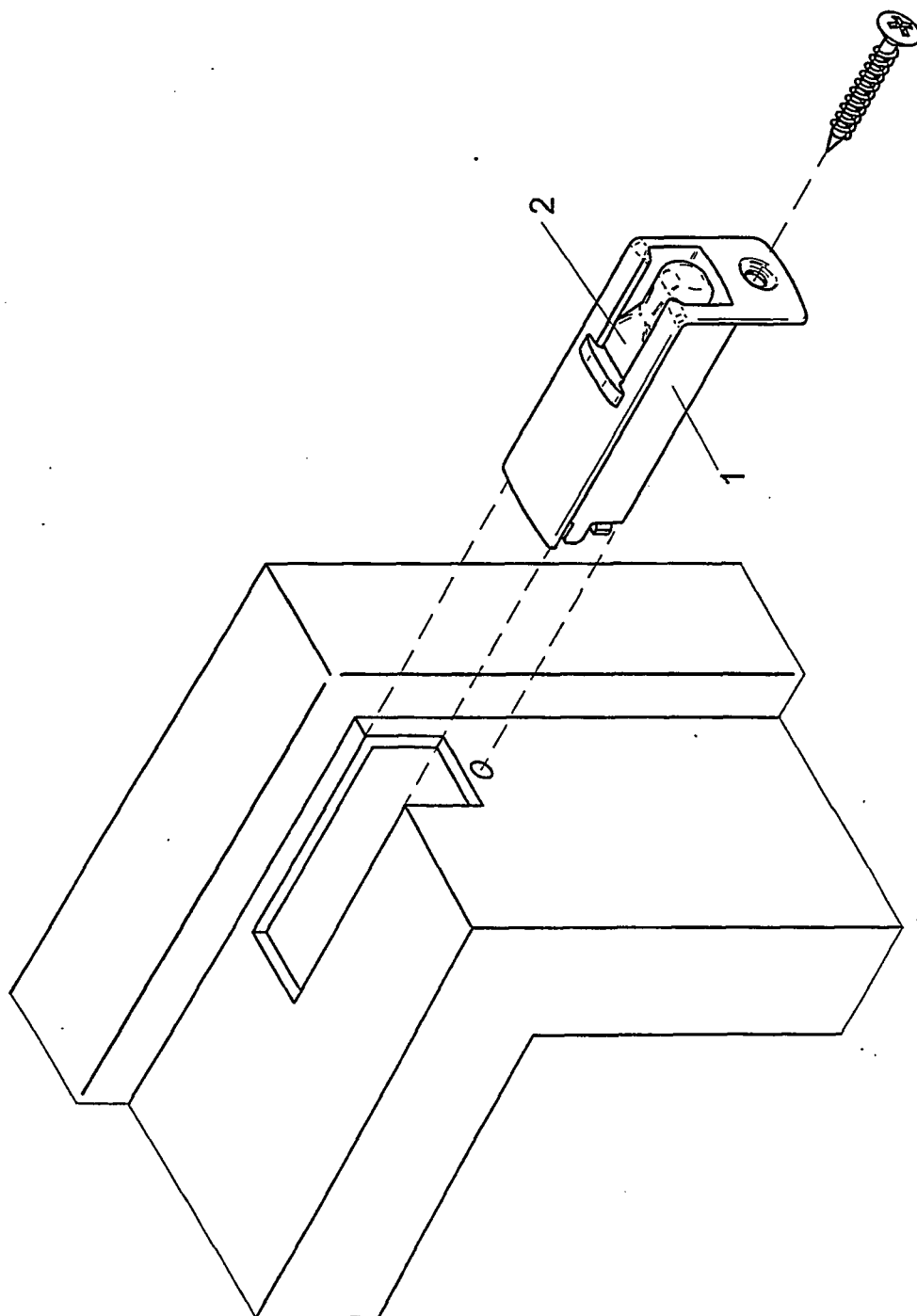


Fig. 10

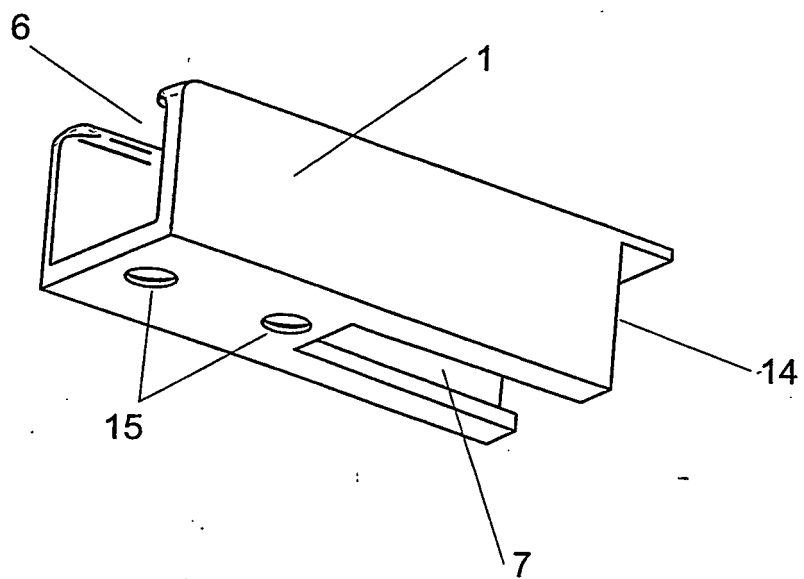


Fig. 11

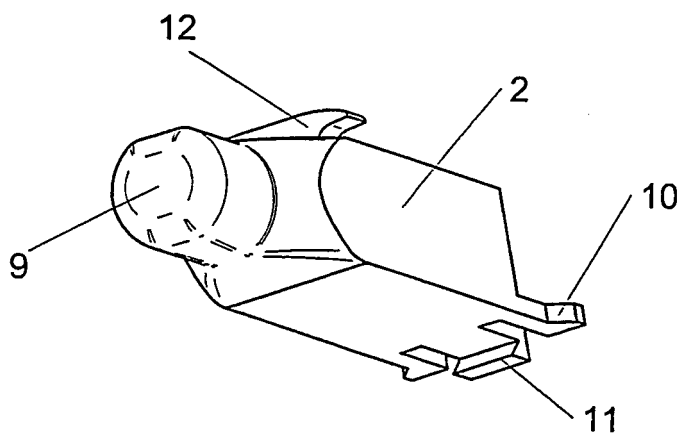


Fig. 12

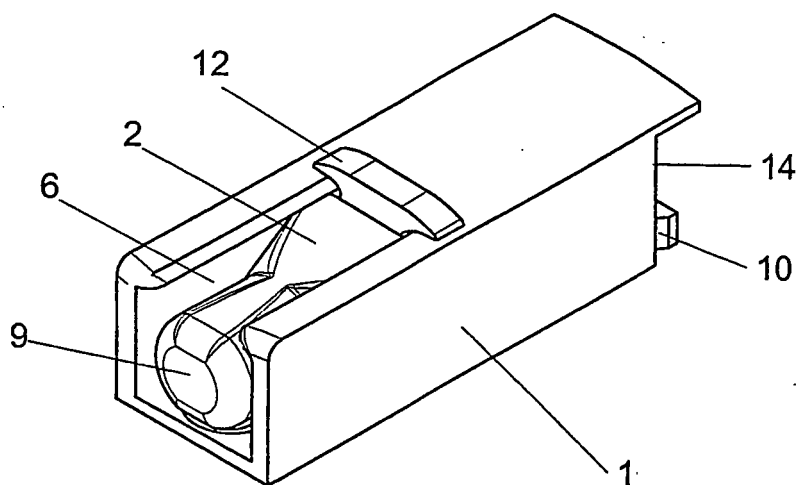


Fig. 13

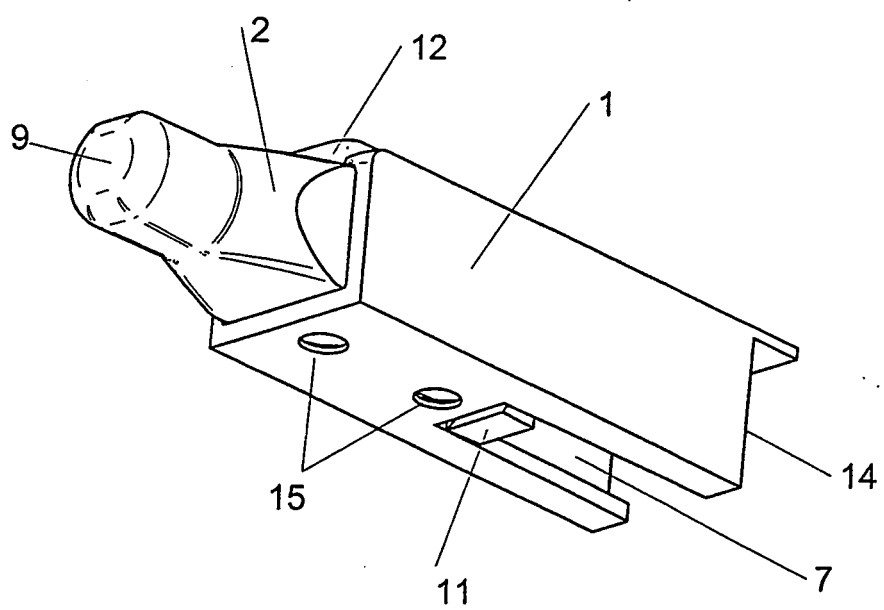


Fig. 14

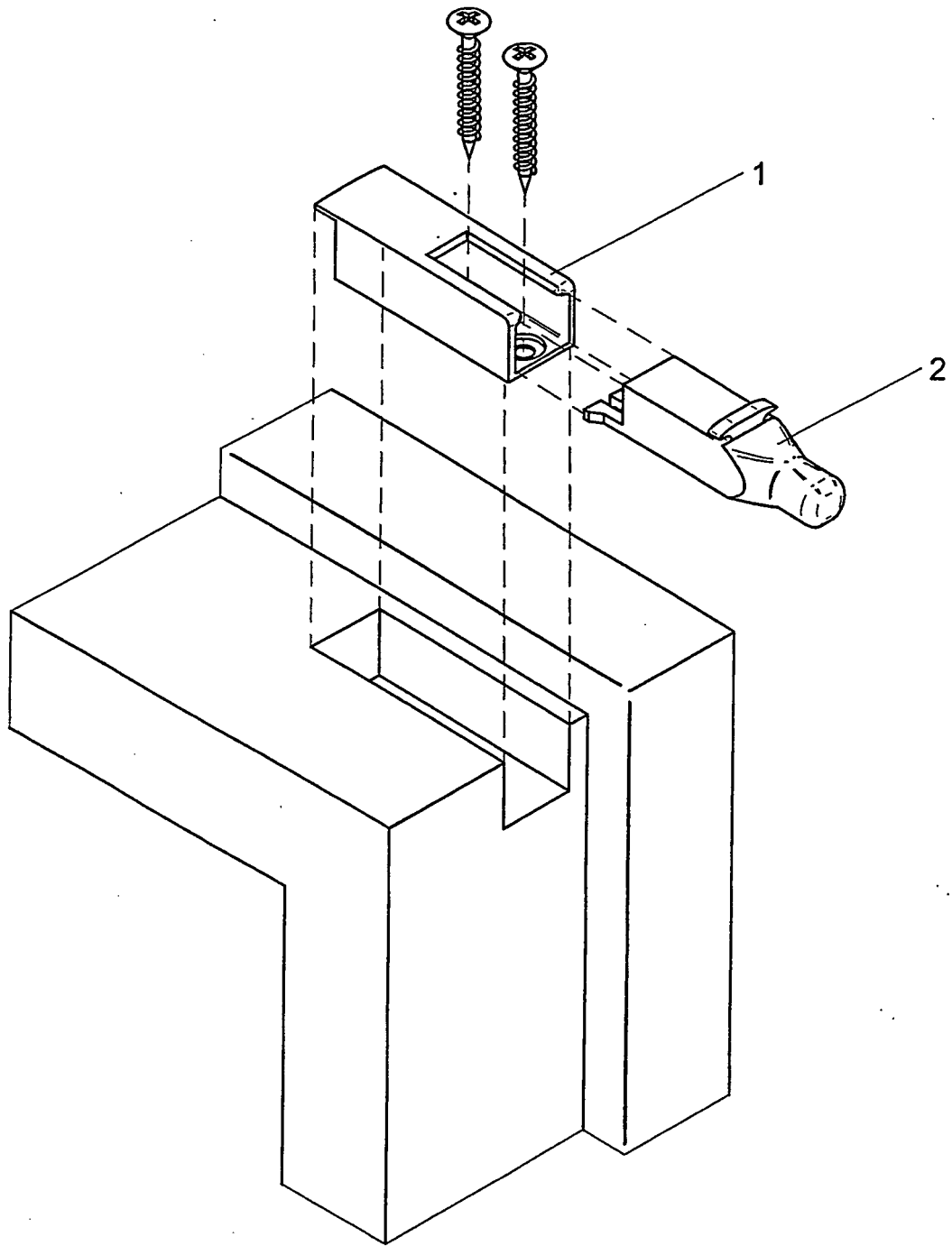


Fig. 15

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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