



(11)

EP 2 275 629 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
16.08.2017 Bulletin 2017/33

(51) Int Cl.:
E05C 1/04 (2006.01)

(21) Application number: **09180714.9**

(22) Date of filing: **23.12.2009**

(54) **Window bolt and window therewith**

Fensterriegel und Fenster damit

Pêne de fenêtre et fenêtre le comportant

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK SM TR**

(30) Priority: **15.06.2009 CN 200920122519 U**

(43) Date of publication of application:
19.01.2011 Bulletin 2011/03

(73) Proprietor: **Dong, Zhijun**
Yinzhou District
Ningbo City
Zhejiang Province (CN)

(72) Inventor: **Dong, Zhijun**
Yinzhou District
Ningbo City
Zhejiang Province (CN)

(74) Representative: **Cabinet Plasseraud**
66, rue de la Chaussée d'Antin
75440 Paris Cedex 09 (FR)

(56) References cited:
WO-A1-2007/070127 FR-A- 338 994
FR-A- 1 014 174 GB-A- 172 459
GB-A- 855 651 US-A- 1 409 152
US-A1- 2007 180 770

EP 2 275 629 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

Field of invention

[0001] The present invention relates to a bolt for a window, as well as relates to a window with said bolt.

Background of invention

[0002] In the prior art, window bolts usually contain a bolt rod and a bolt seat, and the bolt seat is mounted on the window frame by screws, while the bolt rod is able to move back and forth on said bolt seat, and one end of said bolt rod is able to head out of said window frame so that it can cooperate with the locking structure of another window frame in order to limit the movement between these two window frames. The locking structure can be a notch or a bolt nose made of metal, as disclosed e.g. in Chinese utility model No. ZL90221914.6 (grant No. CN20811413U), and in Chinese utility model application No. ZL92106851.4 (grant No. CN1067474A). Patent document WO 2007/070127 A1 discloses a window bolt with a bolt rod and a bolt seat.

[0003] The method of fixing the bolt seat on the window frame, disclosed by the applications mentioned above, is comparatively simple, and it is easy for the bolt seat to become loose during the use of the bolt, which reduces the precision of the position between the bolt rod and the jack or slot of the bolt, and this affects the normal operation of the bolt; Secondly, since the connecting method of the bolt rod and the bolt seat is a little bit complicated, it takes enough time to finish the assembling.

Summary of the invention

[0004] In light of prior art mentioned above, the first technical problem that the present invention intends to solve is to provide a window bolt, of which the bolt seat is fixed solidly, and of which the bolt seat and the rod can be assembled easily.

[0005] Also in light of prior art mentioned above, the second technical problem that the present invention intends to solve is to provide a window with a bolt, of which the bolt seat is fixed solidly, and of which the bolt seat and the rod can be assembled easily.

[0006] The technical scheme which can solve these problems used by the present invention is as follows: a window bolt comprising a bolt rod and a bolt seat, wherein said bolt seat is arranged on a window frame and said bolt rod is able to move back and forth on said bolt seat, one end of said bolt rod is able to head out of said window frame so that it cooperates with the jack or slot of another window frame in order to establish the connection between these two window frames, wherein said bolt seat is in the form of a long strip shape extending along a longitudinal direction, its back end has fixing means for fixing to a first side of the window frame, and its front end has two sides folded downwards respectively in order to

form a baffle part, said front end further has a toothed part which is adapted to be fixed against a second side of an window frame, the toothed part projecting backward in the longitudinal direction and is formed in front of said front end of said baffle part, and wherein the middle part of the bolt seat has a guide hole along the direction of its length, and another end of said bolt rod has a projecting actuation part which projects through said guide hole and is able to move back and forth in said guide hole.

[0007] Preferably said fixing means may be in the form of a screw hole which is used to fix a screw on the first side of said window frame.

[0008] In order to facilitate the assembling, meanwhile, to ensure that it is not easy for the bolt rod to detach from the bolt seat after the assembling, said actuation button may have a width along the length of said bolt rod and has a length perpendicular to the length of said bolt rod, wherein the length of said guide slot is between said width and length of said actuation button, and when said actuation button projects through said guide slot and said bolt rod is rotated to the position which is parallel to said bolt seat, said actuation button can not be separated from said guide slot perpendicularly due to the fact that the width of said guide slot is smaller than the length of said actuation button.

[0009] The upper side of said bolt rod may have projecting friction blocks, and during the back and forth movement of said bolt rod, there is a friction contact between said friction blocks and the lower side of said bolt seat.

[0010] Said toothed parts may project from the lower side of said side walls and may be in the same plane as the latter, or said toothed part may be folded substantially in the form of L-shape at the lower and front of said side walls.

[0011] The invention also provides for a window with a bolt as described above, said window comprising an interior window frame and an exterior window frame, wherein:

- the inside lateral wall of said exterior window frame has a jack or slot for receiving said bolt, the bolt seat being arranged on said interior window frame and said bolt rod is able to move back and forth on said bolt seat, one end of said bolt rod is able to head out of said interior window frame so that it cooperates with the jack or slot of said exterior window frame in order to establish the connection between said interior window frame and said exterior window frame,
- the bolt seat is fixed to a first side of the inside window frame through said fixing means, and the toothed part of the bolt seat is fixed against a second side of an window frame.

[0012] Compared with the prior art, the advantages of this invention are as follows: The bolt seat is fixed on the window frame through two different positions and the movement of each position is limited, which greatly im-

proves the assemble immobility of the bolt seat. Besides, only by passing through the bolt seat can the actuation button of bolt rod be assembled easily.

Brief description of the drawings

[0013]

Figure 1 shows a perspective view of a window according to a first embodiment of the invention.

Figure 2 shows the interior window sash and the bolt of the window of Figure 1, and Figure 2a shows detail IIa of Figure 2.

Figure 3 shows the exploded view of the window sash of Figure 2.

Figure 4 shows an enlarged view of the bolt of the first embodiment.

Figure 5 shows the bolt rod of the bolt of Figure 4.

Figure 6, 7 and 8 show the bolt rod and bolt seat of the embodiment 1, during the assembly process.

Figure 9 shows the bolt seat in a second embodiment.

Figure 10 shows an exploded view of a bolt according to third embodiment.

Figure 11 shows the bolt seat of the bolt of Figure 10.

Figure 12 shows the bolt of Figure 10, assembled.

Detailed description of the invention

[0014] Three embodiments of the invention will be further described with reference to the figures.

Embodiment 1:

[0015] As shown in figure 1 to 3, a window with a bolt of the embodiment 1 contains an interior window sash 5, a bolt 10 arranged on the interior window sash 5 and exterior window frame 6, wherein the interior window sash 5 consists of two erect window frames 53 arranged longitudinally, an upper horizontal frame 51 and a lower horizontal frame 52 arranged horizontally, a secured plugging means 61 for the bolt 10 is arranged on the inner wall of the exterior window frame 6, and the bolt 10 contains a bolt rod 1 and a bolt seat 2, and a notch 511 for holding the bolt rod 1 is formed on the upper horizontal frame 51, and the bolt seat 2 is arranged at the level of the end of the notch 511, and the bolt rod 1 is able to move back and forth on the bolt seat 2.

[0016] As shown in figure 4 and 5, the bolt seat 2 has the shape of a long strip, and its back end has a screw hole 21 which is used to make a screw 30 to be fixed on the upper side of the upper horizontal frame 51, and its front end has toothed or barbed parts 4 which can be fixed against the lateral side of the upper horizontal frame 51, and its middle part is near the screw hole 21 and has a guide slot 22 along the direction of its length. Two sides of the front end of said bolt seat 2 are folded downwards respectively so as to form side walls 3, and the toothed

parts 4 project from the lower side of said side walls 3 and are in the same plane of the latter. One end of the bolt rod 1 is able to head out of the interior window sash 5 so that it can cooperate with the secured plugging means 61 of the external window frame in order to establish the connection between the interior window sash 5 and the external window frame 6, while the other end has a projecting actuation button 11 which projects through the guide slot 22 and is able to move back and forth in the guide slot 22. The upper side of the bolt rod 1 has projecting friction blocks 12, and during the back and forth movement of the bolt rod 1, there is a friction contact between the friction blocks 12 and the bolt seat 2.

[0017] The actuation button 11 has a width along the length of the bolt rod and has a length perpendicular to the length of said bolt rod, wherein the length of the guide slot 22 is between the width and length of the actuation button 11, and when the actuation button 11 projects through the guide slot 22 and the bolt rod 1 is rotated to the position which is parallel to the bolt seat 2, the actuation button 11 cannot be separated from the guide slot 22 perpendicularly due to the fact that the width of the guide slot 22 is smaller than the length of the actuation button 11. The assembly process is shown in figure 6 to 8.

Embodiment 2:

[0018] Embodiment 2 is similar to embodiment 1 and distinguishes over embodiment 1 only by the fact that the toothed parts 4' are folded substantially in the form of an L at the lower portion of the front end of the side walls 3. More precisely, each toothed part 4' may include a tab which extends outwardly from the front end of the corresponding side wall 3, the free end of this tab being extended rearward at least one tooth - here two teeth 41, 42.

Embodiment 3:

[0019] Embodiment 3 is also similar to embodiment 1 and distinguishes over embodiment 1 only by the fact that the rod 1 comprises two detent means 13, 14 longitudinally distant from each other, each of said detent means 13, 14 being adapted to provide a locking function by cooperation with complementary detent means 23 provided on said bolt seat 2".

[0020] More precisely, each of said two detent means 13, 14 may be formed by a hole at a side surface of said rod 1, and said complementary detent means may be formed by a lug 24 provided on an inner face of a flexible tongue 23 which is cut out in the side wall 3 of the bolt seat 2".

[0021] From the above description, one understands that the following features of the invention are of importance:

a. A bolt (10) comprising:

a bolt seat (2, 2', 2'') having the shape of a long

- strip which extends in a longitudinal direction and comprising a rear end part with an attachment part (21) ;
 a sliding bolt rod (1) able to move back and forth relative to said bolt seat ; and
 a protruding actuation button (11) secured to said bolt rod (1) ; characterized in that said bolt seat (2, 2', 2'') further comprises a front end part having at least two toothed parts (4; 4') ;
- b. Each toothed part comprises at least one tooth (40; 41, 42) which projects backwards in said longitudinal direction ;
- c. An intermediate part located between said attachment part (21) and said front end part of said bolt seat (2, 2', 2'') has a guide slot (22) extending in the longitudinal direction, and wherein said protruding actuation button (11) projects through said guide slot (22) and is able to move back and forth in said guide slot ;
- d. Said sliding bolt rod (1) has a front end able to advance forward beyond the front end of said bolt seat (2, 2', 2'') when said sliding bolt rod (1) is moved forward and has a rear end on which said actuation button (11) is secured ;
- e. Said attachment part (21) is a screw hole intended for being mounted adjacent to a first side (51) of a window sash (5), and wherein said toothed parts (4; 4') are intended for being knocked in a second side (53) of said window sash ;
- d. Said protruding actuation button (11) has a width which extends along the longitudinal direction of said bolt rod (1) and has a length which extends perpendicularly to said longitudinal direction, said width of said actuation button (11) being smaller than a width of said guide slot (22), said length of said actuation button (11) being smaller than a length of said guide slot (22) and greater than a width of said guide slot (22) so that said actuation button (11) is impeded to move downwards in a direction perpendicular to said guide slot when said bolt rod (1) is parallel to the longitudinal direction of said bolt seat (2) ;
- e. An upper side of said bolt rod (1) has projecting friction blocks (12) provided to slide against a lower side surface of said bolt seat (2, 2', 2'') during the back and forth movement of said bolt rod ;
- f. Two lateral sides of said front end part of said bolt seat (2, 2', 2'') are folded downwards to form two substantially plane side walls (3) parallel to each other, each of said toothed parts (4; 4') being formed in a front end of a said side wall ;
- g. Each of said toothed parts (4) projects from a lower edge of the side wall (3) and is in the same plane ;
- h. Each of said toothed parts (4') is folded to form a substantially L-shaped part located at a lower end of the front end of the side wall (3) ;
- i. A main part of said substantially L-shaped part (4') is substantially rectangular and extends perpendicularly to said side wall (3), and a second part of said substantially L-shaped part (4') is formed by said at least one tooth (41, 42) ;
- j. Said rod (1) comprises two detent means (13, 14) longitudinally distant from each other, each of said detent means (13, 14) being adapted to provide a locking function by cooperation with complementary detent means (23) provided on said bolt seat (2'') ;
- k. Each of said two detent means (13, 14) is formed by a hole at a side surface of said rod (1), and said complementary detent means are formed by a lug (24) provided on an inner face of a flexible tongue (23) which is formed by a cut part of a said side wall (3) ;
- l. A swivelling window assembly may comprise:
- an interior window sash (5) ;
 a bolt (10) according to any of the preceding numbered features, which is arranged on a first side (51) of said interior window sash (5), the two toothed parts (4; 4') of the bolt seat (2, 2', 2'') being secured against a second side (53) of said interior window sash (5) ; and
 an exterior window frame (6) having an inside lateral wall on which are secured plugging means (61) adapted to receive a front end of said bolt.
- m. Said first side (51) of said interior window sash (5) has a groove (511) accommodating said bolt rod (1), while said bolt seat (2, 2', 2'') is arranged flush with the opening of said groove.

Claims

1. A window bolt (10) comprising a bolt rod (1) and a bolt seat (2; 2'; 2''), wherein said bolt seat is designed to be arranged on a window frame (5) and said bolt rod is able to move back and forth on said bolt seat (2; 2'; 2''), one end of said bolt rod (1) being able to head out of said window frame (5) so that it cooperates with the jack or slot of another window frame (6) in order to establish a connection between these two window frames (5, 6), wherein

said bolt seat (2; 2'; 2") is in the form of a long strip shape extending along a longitudinal direction, its back end has fixing means (21) for fixing to a first side (51) of the window frame (5), and its front end has two sides folded downwards respectively in order to form a baffle part (3), said front end further has a toothed part (4, 4') which is adapted to be fixed against a second side (53) of an window frame (5), the toothed part (4, 4') projecting backward in the longitudinal direction and is formed in front of said front end of said baffle part (3), and wherein the middle part of the bolt seat has a guide hole (22) along the direction of its length, and another end of said bolt rod (1) has a projecting actuation part (11) which projects through said guide hole (22) and is able to move back and forth in said guide hole (22).

2. A window bolt (10) according to claim 1, wherein said fixing means (21) are in the form of a screw hole which is used to fix a screw on the first side (51) of said window frame (5).
3. A window bolt (10) according to claim 1, **characterized in that** said actuation part (11) has a width along the length of said bolt rod (1) and has a length perpendicular to the length of said bolt rod (1), wherein the length of said guide hole (22) is between said width and length of said actuation part (11), and when said actuation part (11) projects through said guide hole (22) and said bolt rod (1) is rotated to the position which is parallel to said bolt seat (2; 2'; 2"), said actuation part (11) can not be separated from said guide hole (22) perpendicularly due to the fact that the width of said guide hole is smaller than the length of said actuation part (11).
4. A window bolt (10) according to any one of the preceding claims, **characterized in that** the upper side of said bolt rod (1) has projecting friction blocks (12), and during the back and forth movement of said bolt rod (1), there is a friction contact between said friction blocks (12) and the lower side of said bolt seat (2; 2'; 2").
5. A window bolt (10) according to claim 1, **characterized in that**,
 - said toothed part (4) projects from the lower side of said baffle part (3) and is in the same plane of the latter, or
 - said toothed part (4') is folded substantially in the form of an L at the lower and front of said baffle part (3).
6. A window bolt (10) according to any one of the preceding claims, wherein said rod (1) comprises two detent means (13, 14)

longitudinally distant from each other, each of said detent means (13, 14) being adapted to provide a locking function by cooperation with complementary detent means (23) provided on said bolt seat (2").

7. A window bolt according to claim 6, wherein each of said two detent means (13, 14) is formed by a hole at a side surface of said rod (1), and said complementary detent means are formed by a lug (24) provided on an inner face of a flexible tongue (23) which is formed by a cut part of a said side wall (3).
8. A window with a bolt (10) according to anyone of the preceding claims, said window comprising an interior window frame (5) and an exterior window frame (6), wherein:
 - the inside lateral wall of said exterior window frame (6) has a jack or slot for receiving said bolt (10), the bolt seat (2; 2'; 2") being arranged on said interior window frame (5) and said bolt rod (1) is able to move back and forth on said bolt seat (2; 2'; 2"), one end of said bolt rod (1) is able to head out of said interior window frame (5) so that it cooperates with the jack or slot of said exterior window frame (6) in order to establish the connection between said interior window frame (5) and said exterior window frame (6),
 - the bolt seat (2; 2'; 2") is fixed to a first side of the inside window frame (5) through said fixing means (21), and the toothed part (4, 4') of the bolt seat (2; 2'; 2") is fixed against a second side of an window frame (5).

Patentansprüche

1. Fensterriegel (10) aufweisend einen Riegelstab (1) und einen Riegelsitz (2; 2'; 2"), wobei der Riegelsitz dazu ausgelegt ist, an einem Fensterrahmen (5) angeordnet zu werden, und der Riegelstab an dem Riegelsitz (2; 2'; 2") hin und her bewegbar ist, wobei ein Ende des Riegelstabs (1) aus dem Fensterrahmen (5) ausgefahren werden kann, so dass es mit der Buchse oder dem Schlitz eines anderen Fensterrahmens (6) zusammenwirkt, um eine Verbindung zwischen diesen zwei Fensterrahmen (5, 6) herzustellen, wobei der Riegelsitz (2; 2'; 2") in Form eines sich in eine Längsrichtung erstreckenden langen Streifens ausgebildet ist, dessen hinteres Ende Befestigungsmittel (21) zum Befestigen an einer ersten Seite (51) des Fensterrahmens (5) hat und dessen vorderes Ende zwei jeweils abwärts gefaltete Seiten hat, um einen Umlenkteil (3) zu bilden, wobei das vordere Ende desweiteren einen gezahnten Teil (4, 4') hat,

der dazu ausgebildet ist, gegen eine zweite Seite (53) eines Fensterrahmens (5) befestigt zu werden, wobei der gezahnte Teil (4, 4') nach hinten in die Längsrichtung vorsteht und vor dem vorderen Ende des Umlenkteils (3) gebildet ist, und wobei der mittlere Teil des Riegelsitzes ein Führungsloch (22) entlang der Richtung seiner Länge hat und ein anderes Ende des Riegelstabs (1) einen vorstehenden Betätigungsteil (11) hat, der durch das Führungsloch (22) hindurch ragt und in dem Führungsloch (22) hin und her bewegbar ist.

2. Fensterriegel (10) nach Anspruch 1, wobei das Befestigungsmittel (21) in Form eines Schraubenlochs (21) ist, das verwendet wird, um eine Schraube an der ersten Seite (51) des Fensterrahmens (5) zu befestigen.

3. Fensterriegel (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Betätigungsteil (11) eine Breite entlang der Länge des Riegelstabs (1) hat und eine Länge senkrecht zur Länge des Riegelstabs (1) hat, wobei die Länge des Führungslochs (22) zwischen der Breite und der Länge des Betätigungsteils (11) ist, und wenn der Betätigungsteil (11) durch das Führungsloch (22) ragt und der Riegelstab (1) in die Position, die parallel zu dem Riegelsitz (2; 2'; 2'') ist, gedreht wird, der Betätigungsteil (11) sich nicht senkrecht aus dem Führungsloch (22) lösen kann, da die Breite des Führungslochs kleiner als die Länge des Betätigungsteils (11) ist.

4. Fensterriegel (10) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die obere Seite des Riegelstabs (1) vorstehende Reibungsblöcke (12) hat und dass es während der Hin- und Herbewegung des Riegelstabs (1) einen Reibungskontakt zwischen den Reibungsblöcken (12) und der unteren Seite des Riegelsitzes (2; 2'; 2'') gibt.

5. Fensterriegel (10) nach Anspruch 1, **dadurch gekennzeichnet, dass**

- der gezahnte Teil (4) von der unteren Seite des Umlenkteils (3) vorsteht und in der gleichen Ebene wie letzterer angeordnet ist, oder
- der gezahnte Teil (4') im Wesentlichen in Form eines L unten und vorne an dem Umlenkteil (3) gefaltet ist.

6. Fensterriegel (10) nach einem der vorstehenden Ansprüche, wobei der Stab (1) zwei in Längsrichtung voneinander beabstandete Rastvorrichtungen (13, 14) aufweist, wobei jede der Rastvorrichtungen (13, 14) dazu ausgebildet ist, durch Zusammenwirken mit komplementären Rastvorrichtungen (23), die an dem Riegelsitz (2'') bereitgestellt sind, eine

Schließfunktion bereitzustellen.

7. Fensterriegel nach Anspruch 6, wobei jede der zwei Rastvorrichtungen (13, 14) durch ein Loch an einer Seitenfläche des Stabs (1) gebildet ist und die komplementären Rastvorrichtungen von einem Vorsprung (24) gebildet werden, der an einer Innenfläche einer biegsamen Zunge (23) bereitgestellt ist, die von einem von der Seitenwand (3) geschnittenen Teil gebildet wird.

8. Fenster mit einem Riegel (10) nach einem der vorstehenden Ansprüche, wobei das Fenster einen inneren Fensterrahmen (5) und einen äußeren Fensterrahmen (6) aufweist, wobei:

- die seitliche Innenwand des äußeren Fensterrahmens (6) eine Buchse oder einen Schlitz zur Aufnahme des Riegels (10) hat, wobei der Riegelsitz (2; 2'; 2'') an dem inneren Fensterrahmen (5) angeordnet ist und der Riegelstab (1) an dem Riegelsitz (2; 2'; 2'') hin und her bewegbar ist, wobei ein Ende des Riegelstabs (1) aus dem inneren Fensterrahmen (5) ausgefahren werden kann, so dass es mit der Buchse oder dem Schlitz des äußeren Fensterrahmens zusammenwirkt (6), um die Verbindung zwischen dem inneren Fensterrahmen (5) und dem äußeren Fensterrahmen (6) herzustellen,
- der Riegelsitz (2; 2'; 2'') mit Hilfe der Befestigungsmittel (21) an einer ersten Seite des inneren Fensterrahmens (5) befestigt ist und der gezahnte Teil (4, 4') des Riegelsitzes (2; 2'; 2'') gegen eine zweite Seite eines Fensterrahmens (5) befestigt ist.

Revendications

1. Verrou de fenêtre (10) comprenant une tige de verrou (1) et une assise de verrou (2 ; 2' ; 2''), dans lequel ladite assise de verrou est conçue pour être agencée sur un cadre de fenêtre (5) et ladite tige de verrou est capable de se déplacer en va-et-vient sur ladite assise de verrou (2 ; 2' ; 2''), une extrémité de ladite tige de verrou (1) étant capable de sortir dudit cadre de fenêtre (5) de façon à coopérer avec le vérin ou la fente d'un autre cadre de fenêtre (6) afin d'établir une liaison entre ces deux cadres de fenêtre (5, 6), dans lequel ladite assise de verrou (2 ; 2' ; 2'') est sous forme d'une longue bande s'étendant le long d'une direction longitudinale, son extrémité arrière a des moyens de fixation (21) pour une fixation à un premier côté (51) du cadre de fenêtre (5), et son extrémité avant a deux côtés pliés vers le bas respectivement afin de former une partie de déflecteur (3), ladite extrémité avant a en outre

- une partie dentée (4, 4') qui est adaptée pour être fixée contre un second côté (53) d'un cadre de fenêtre (5), la partie dentée (4, 4') faisant saillie vers l'arrière dans la direction longitudinale et est formée à l'avant de ladite extrémité avant de ladite partie de déflecteur (3), et dans lequel la partie milieu de l'assise de verrou a un trou de guidage (22) le long de la direction de sa longueur, et une autre extrémité de ladite tige de verrou (1) a une partie d'actionnement saillante (11) qui fait saillie à travers ledit trou de guidage (22) et est capable de se déplacer en va-et-vient dans ledit trou de guidage (22).
2. Verrou de fenêtre (10) selon la revendication 1, dans lequel lesdits moyens de fixation (21) sont sous forme d'un trou de vis qui est utilisé pour fixer une vis sur le premier côté (51) dudit cadre de fenêtre (5).
3. Verrou de fenêtre (10) selon la revendication 1, **caractérisé en ce que** ladite partie d'actionnement (11) a une largeur suivant la longueur de ladite tige de verrou (1) et a une longueur perpendiculaire à la longueur de ladite tige de verrou (1), dans lequel la longueur dudit trou de guidage (22) est entre ladite largeur et ladite longueur de ladite partie d'actionnement (11), et lorsque ladite partie d'actionnement (11) fait saillie à travers ledit trou de guidage (22) et que ladite tige de verrou (1) est tournée à la position qui est parallèle à ladite assise de verrou (2 ; 2' ; 2''), ladite partie d'actionnement (11) ne peut pas être séparée dudit trou de guidage (22) de façon perpendiculaire en raison du fait que la largeur dudit trou de guidage est plus petite que la longueur de ladite partie d'actionnement (11).
4. Verrou de fenêtre (10) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le côté supérieur de ladite tige de verrou (1) a des blocs de frottement saillants (12), et pendant le déplacement en va-et-vient de ladite tige de verrou (1), il y a un contact de frottement entre lesdits blocs de frottement (12) et le côté inférieur de ladite assise de verrou (2 ; 2' ; 2'').
5. Verrou de fenêtre (10) selon la revendication 1, **caractérisé en ce que**,
- ladite partie dentée (4) fait saillie depuis le côté inférieur de ladite partie de déflecteur (3) et est dans le même plan que cette dernière, ou
 - ladite partie dentée (4') est pliée sensiblement sous forme d'un L au niveau de la partie inférieure et avant de ladite partie de déflecteur (3).
6. Verrou de fenêtre (10) selon l'une quelconque des revendications précédentes, dans lequel ladite tige (1) comprend deux moyens de cran (13, 14) distants longitudinalement l'un de l'autre, chacun desdits moyens de cran (13, 14) étant adapté pour fournir une fonction de verrouillage par coopération avec des moyens de cran complémentaires (23) prévus sur ladite assise de verrou (2'').
7. Verrou de fenêtre selon la revendication 6, dans lequel chacun desdits deux moyens de cran (13, 14) est formé par un trou au niveau d'une surface de côté de ladite tige (1), et lesdits moyens de cran complémentaires sont formés par un ergot (24) formé sur une face interne d'une langue flexible (23) qui est formée par une partie de découpe d'une dite paroi de côté (3).
8. Fenêtre dotée d'un verrou (10) selon l'une quelconque des revendications précédentes, ladite fenêtre comprenant un cadre de fenêtre intérieur (5) et un cadre de fenêtre extérieur (6), dans laquelle :
- la paroi latérale intérieure dudit cadre de fenêtre extérieur (6) a un vérin ou une fente pour recevoir ledit verrou (10), l'assise de verrou (2 ; 2' ; 2'') étant agencée sur ledit cadre de fenêtre intérieur (5) et ladite tige de verrou (1) est capable de se déplacer en va-et-vient sur ladite assise de verrou (2 ; 2' ; 2''), une extrémité de ladite tige de verrou (1) est capable de sortir dudit cadre de fenêtre intérieur (5) de façon à coopérer avec le vérin ou la fente dudit cadre de fenêtre extérieur (6) afin d'établir la liaison entre ledit cadre de fenêtre intérieur (5) et ledit cadre de fenêtre extérieur (6),
 - l'assise de verrou (2 ; 2' ; 2'') est fixée à un premier côté du cadre de fenêtre intérieur (5) par l'intermédiaire desdits moyens de fixation (21), et la partie dentée (4, 4') de l'assise de verrou (2 ; 2' ; 2'') est fixée contre un second côté d'un cadre de fenêtre (5).

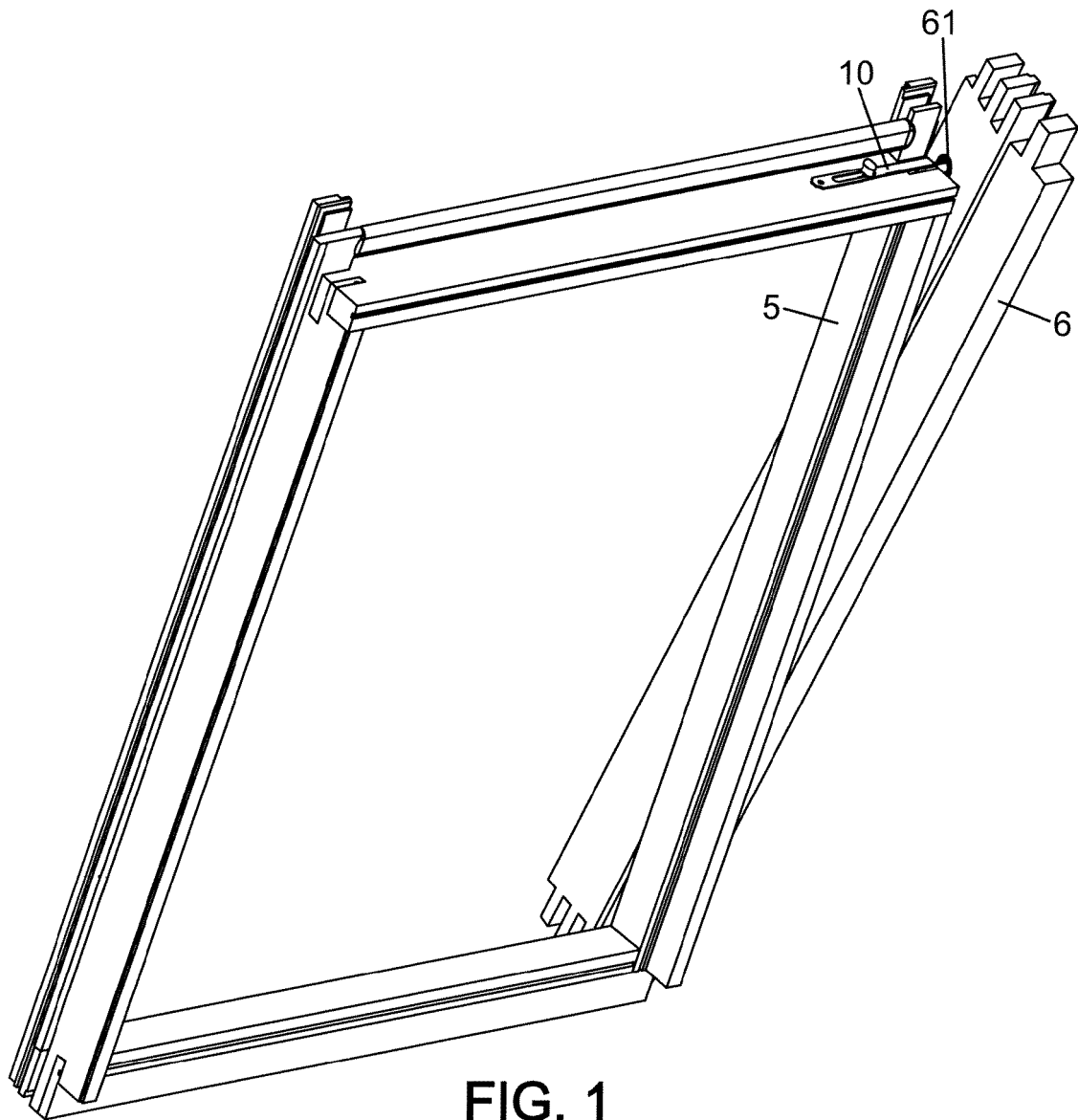


FIG. 2

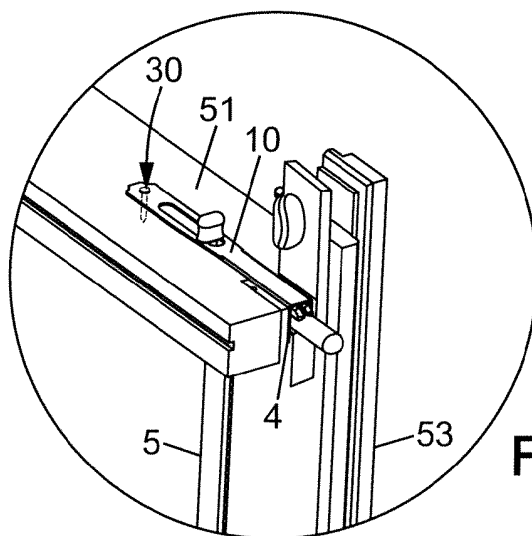
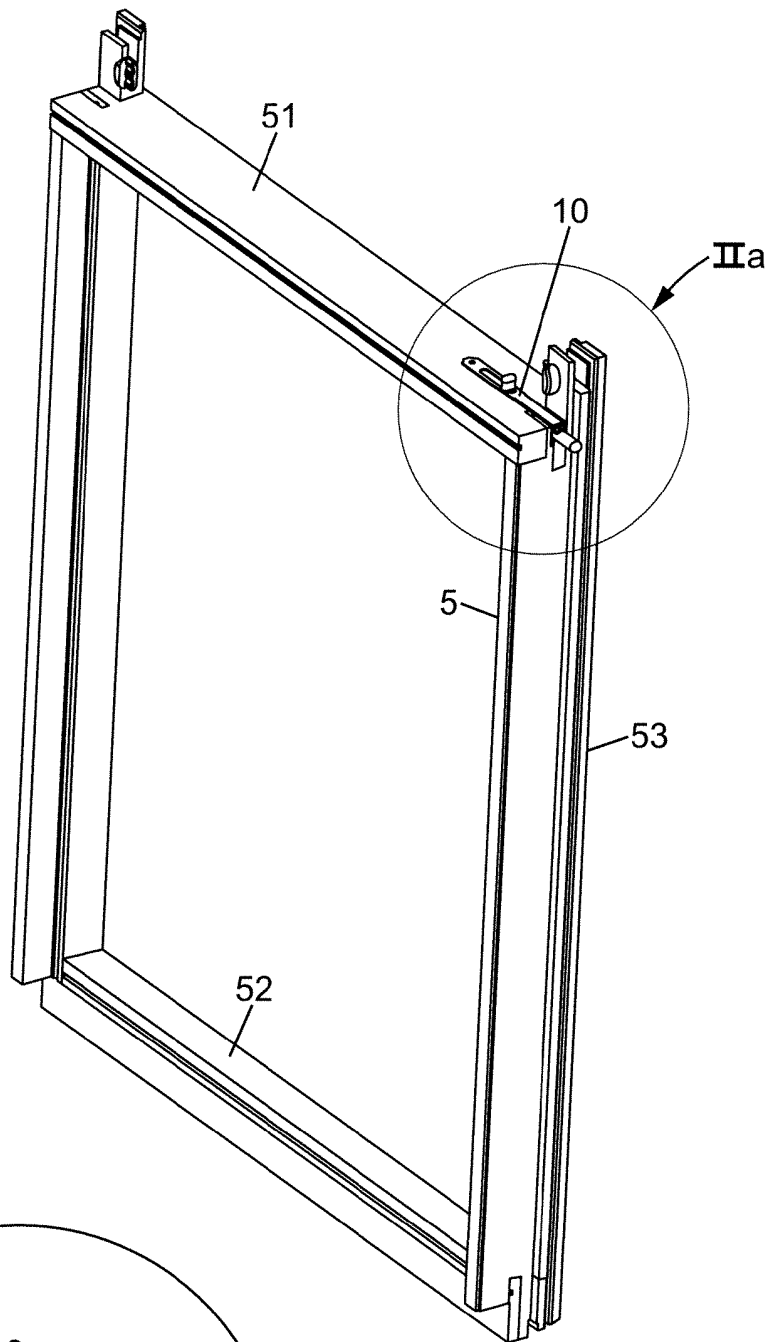


FIG. 2a

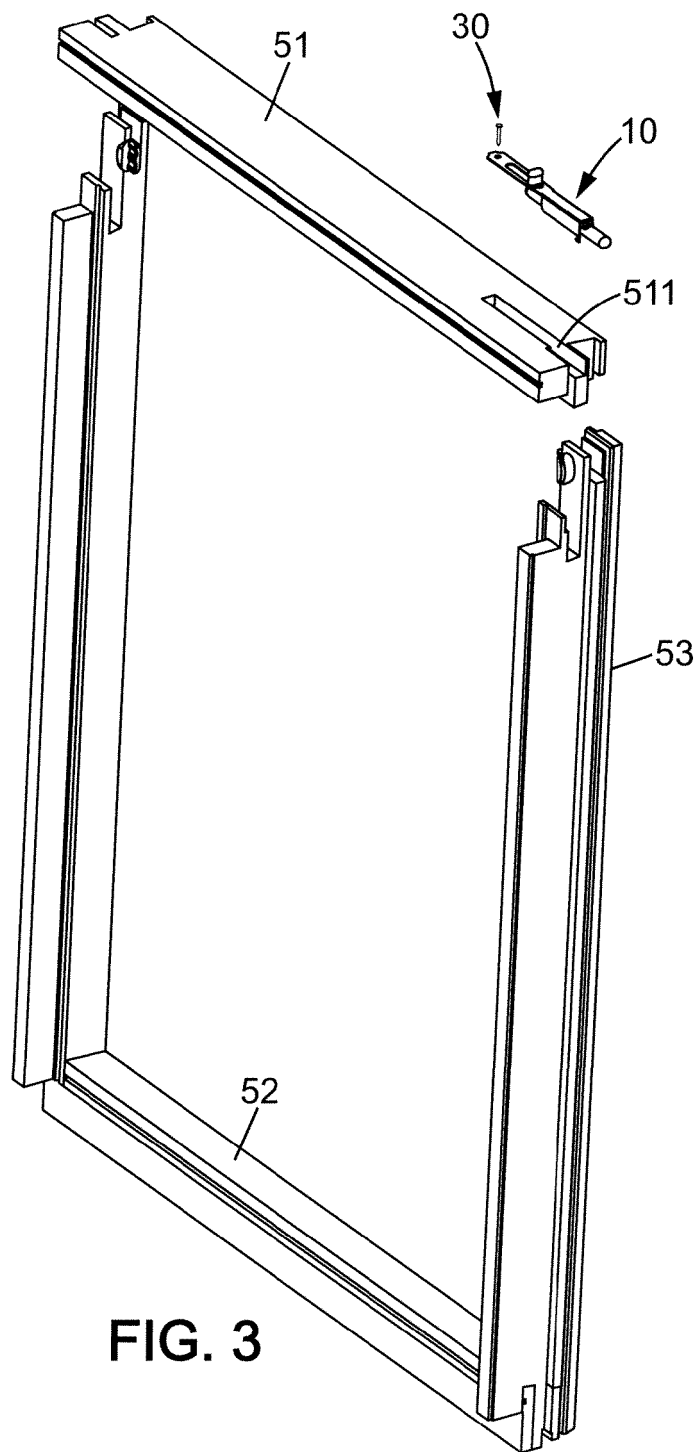
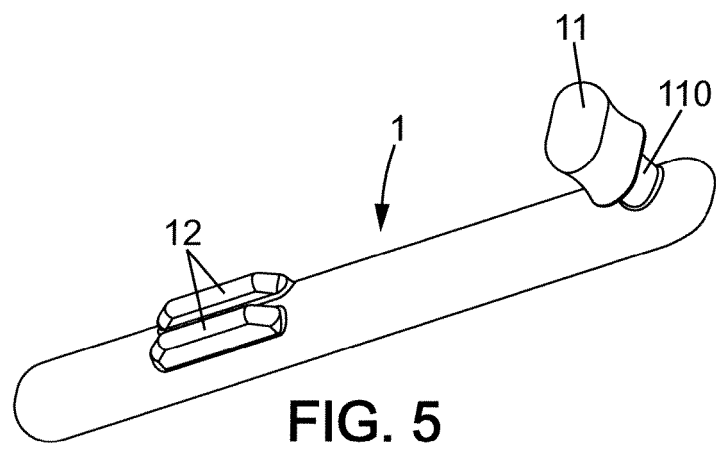
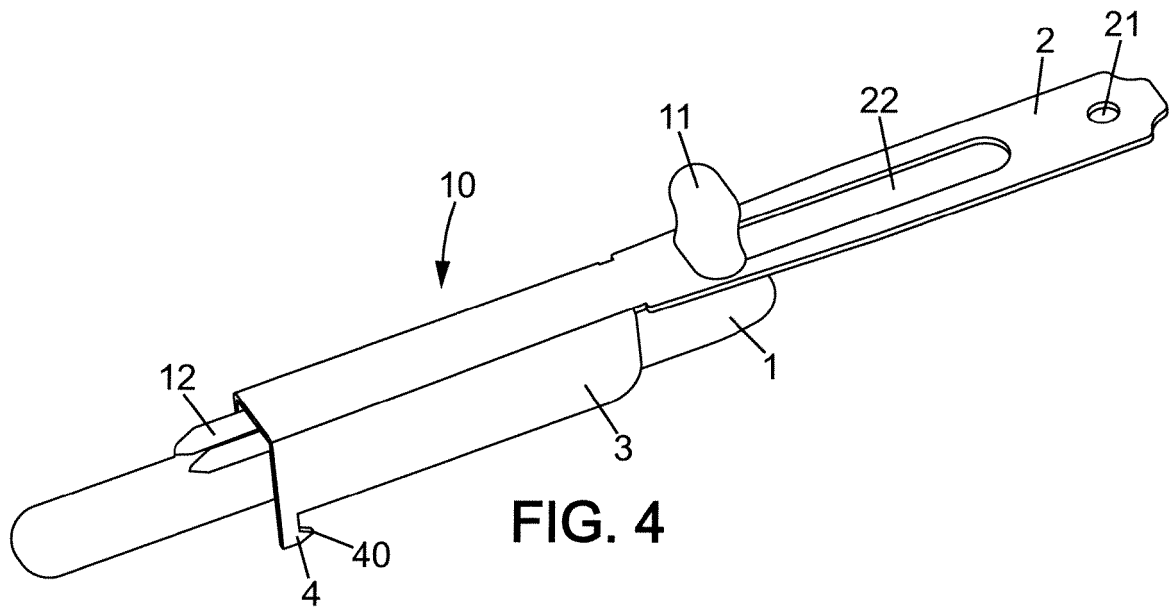
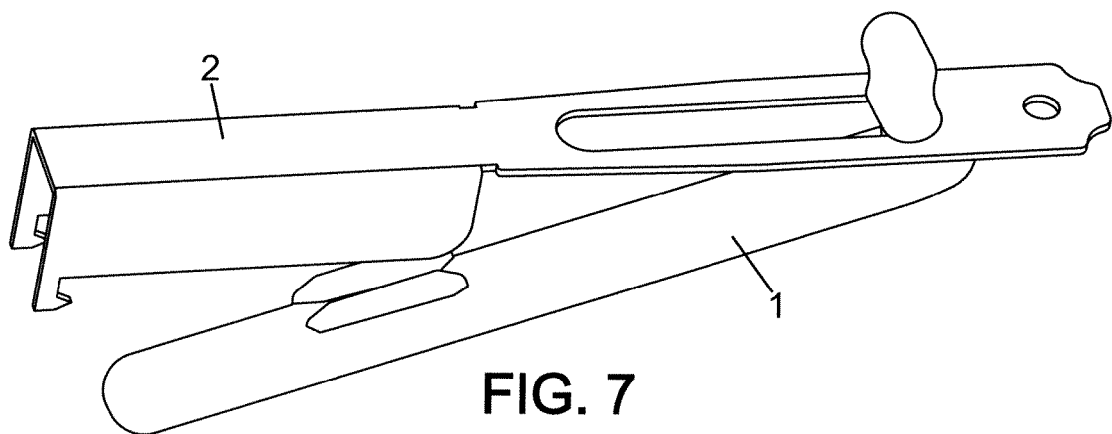
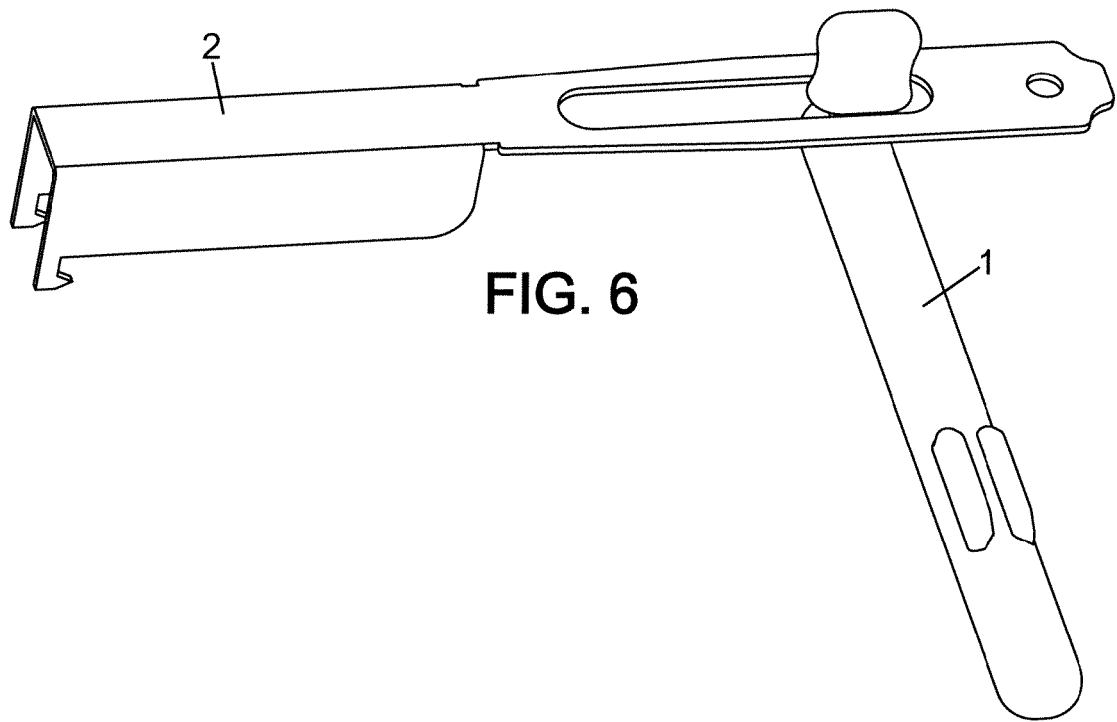
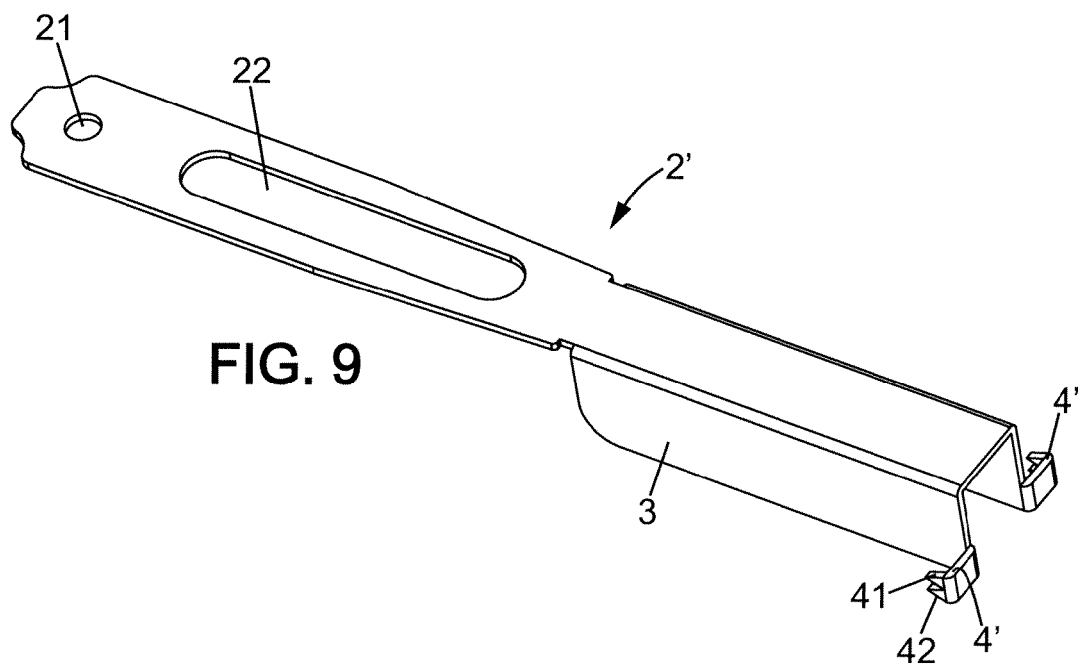
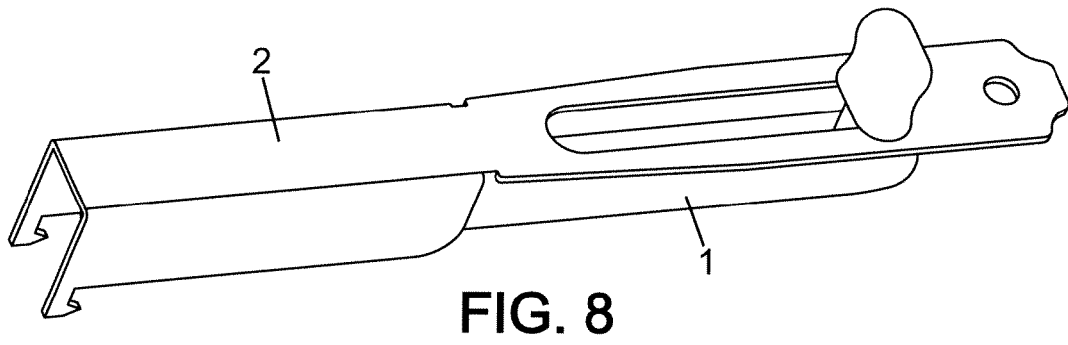
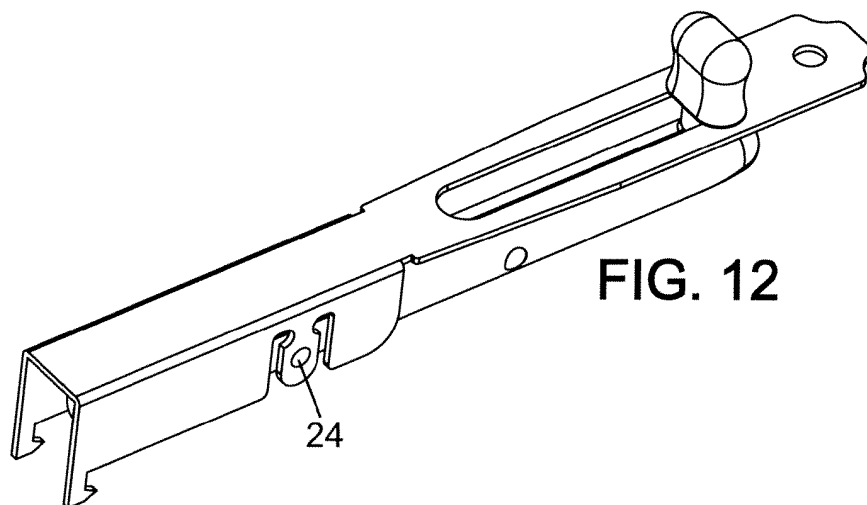
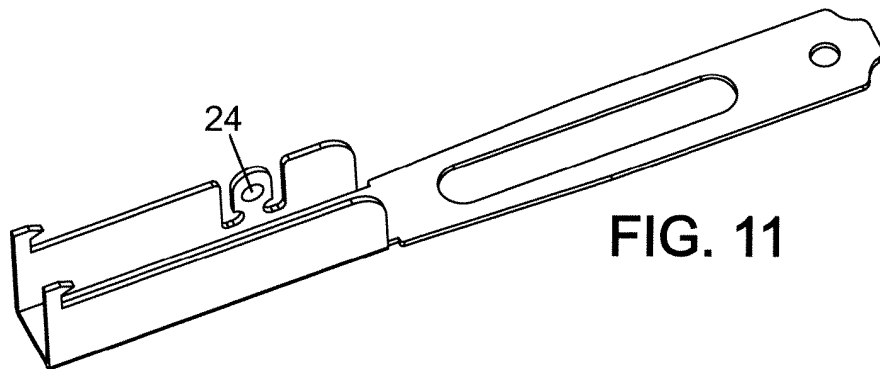
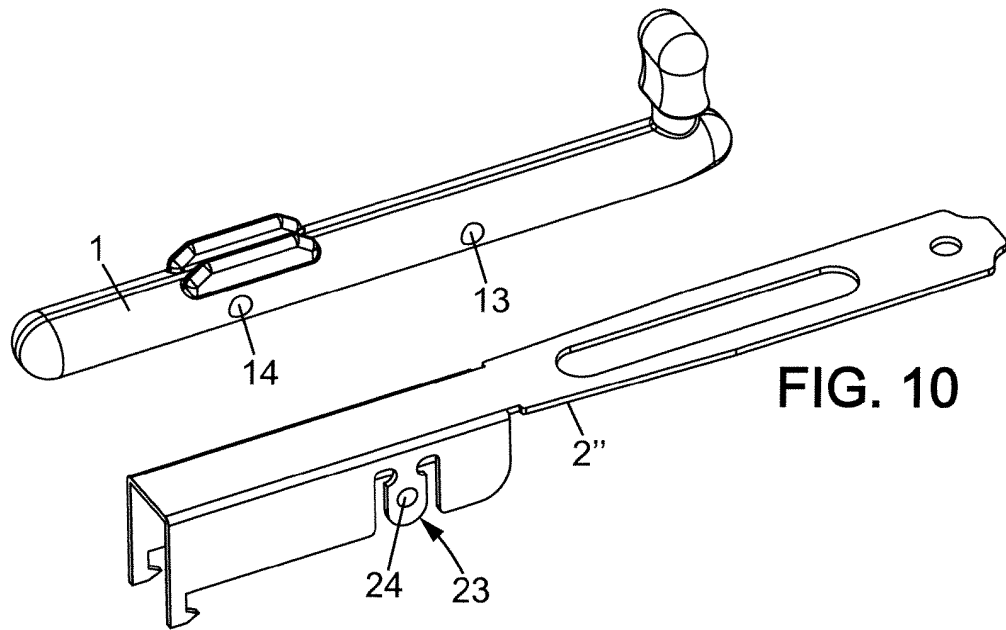


FIG. 3









REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN ZL90221914 [0002]
- CN 20811413 U [0002]
- CN ZL92106851 [0002]
- CN 1067474 A [0002]
- WO 2007070127 A1 [0002]