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(54) **CASEMENT LATCH WITH FIX POSITION**

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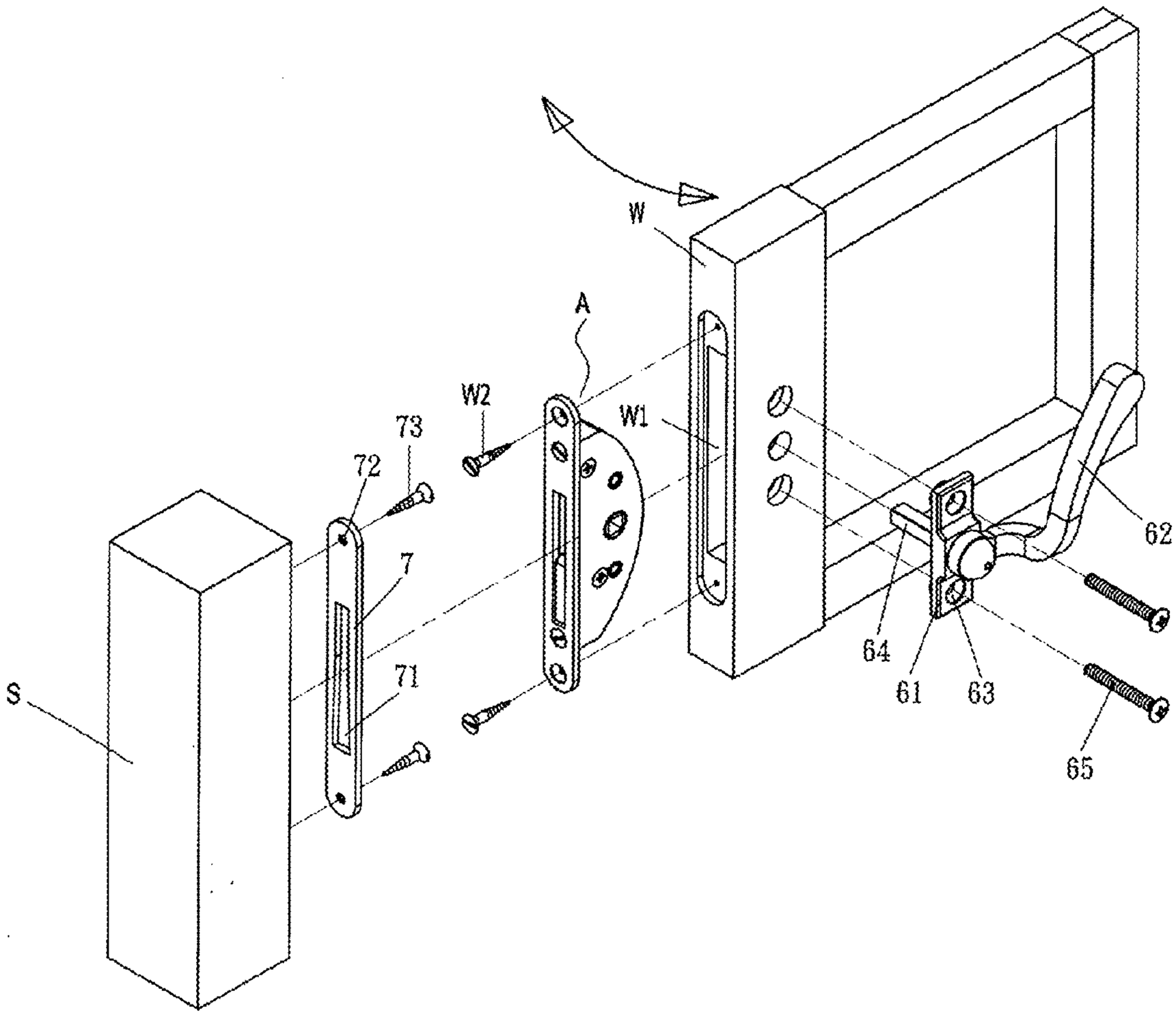
(57) **ABSTRACT**

A casement latch with fix position device includes a base including a shaft hole, first and second sets of two raise plates, and a slide accepter; two opposite blade springs each fastened between the raise plates of the first set of raise plates or the second set of raise plates; a rotary bolt including a shaft short side on a first surface, a shaft long side on an opposite second surface, a square through hole the first and shaft long sides, an engagement member, and a rotary bolt interface wherein the shaft long side is between the blade springs and into the shaft hole; a cover plate releasably secured to the base and including a shaft hole with the shaft short side rotatably disposed therein; and a lever assembly co-rotated with the rotary bolt and releasably secured to a casement, the cover plate, and the base.



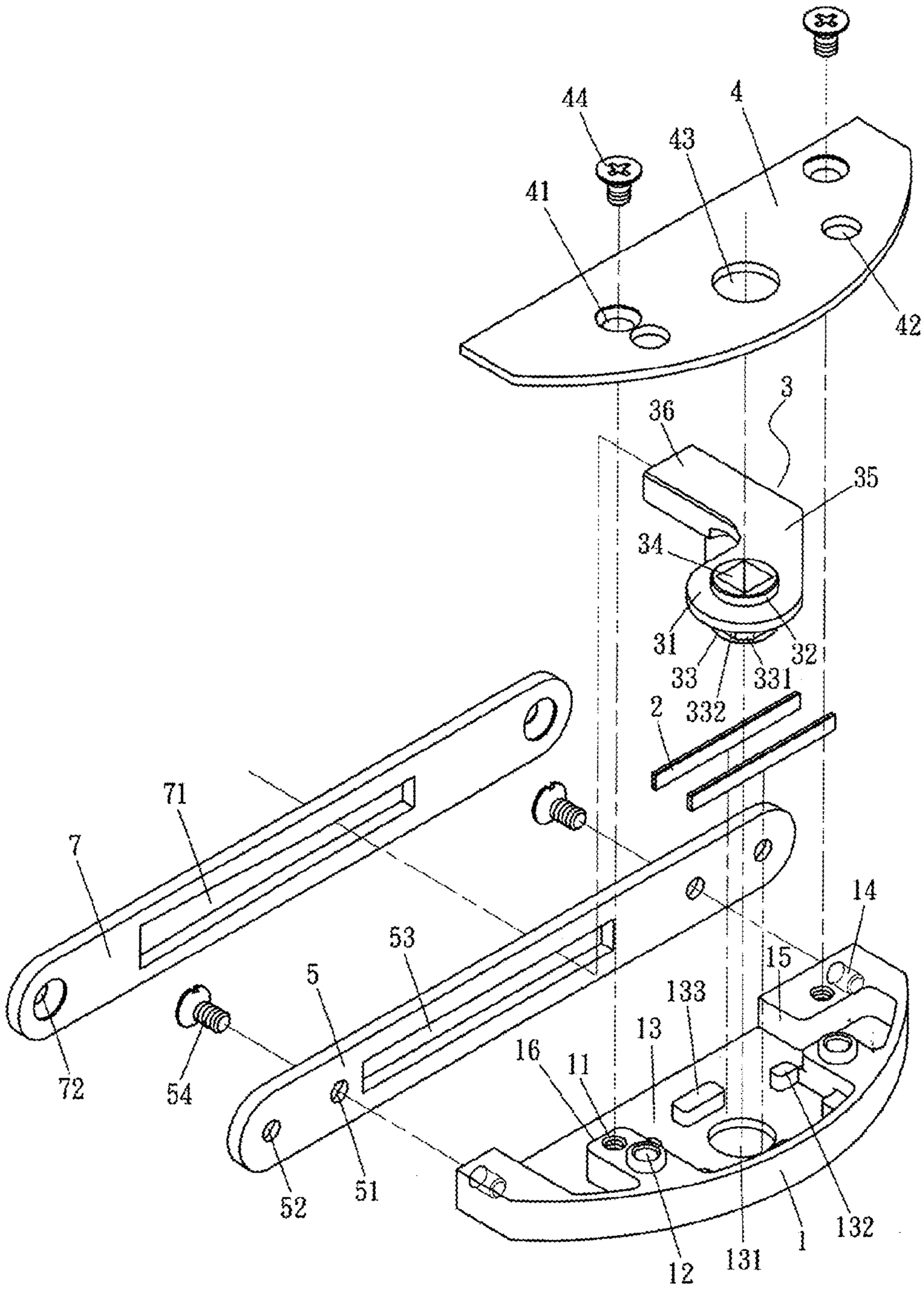

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Fig. 1

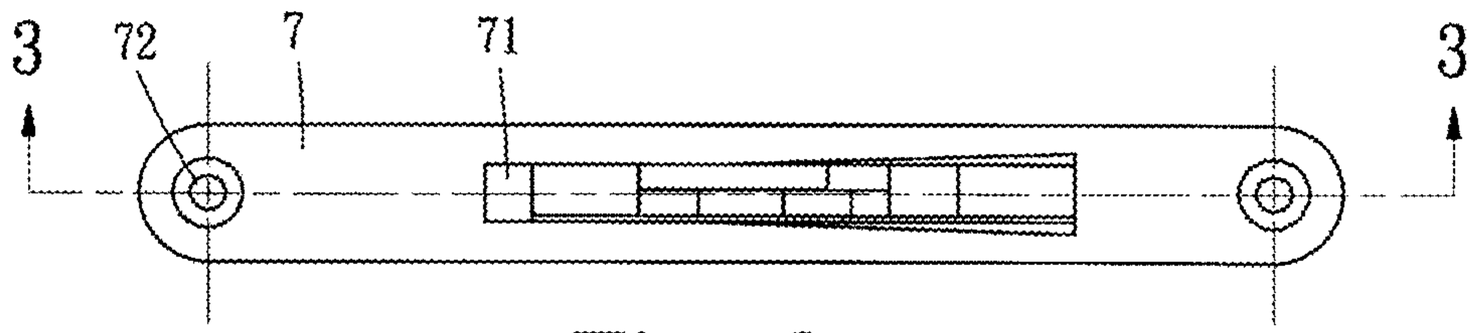

Fig. 2

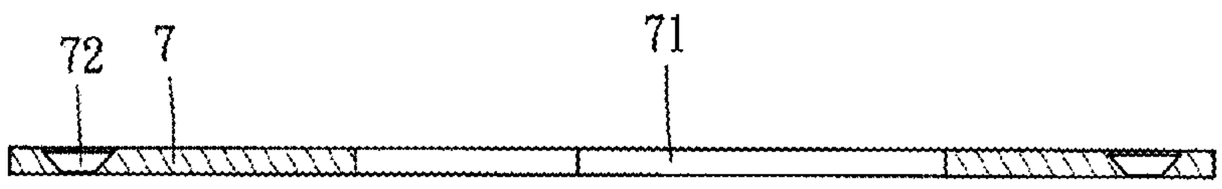

Fig. 2A

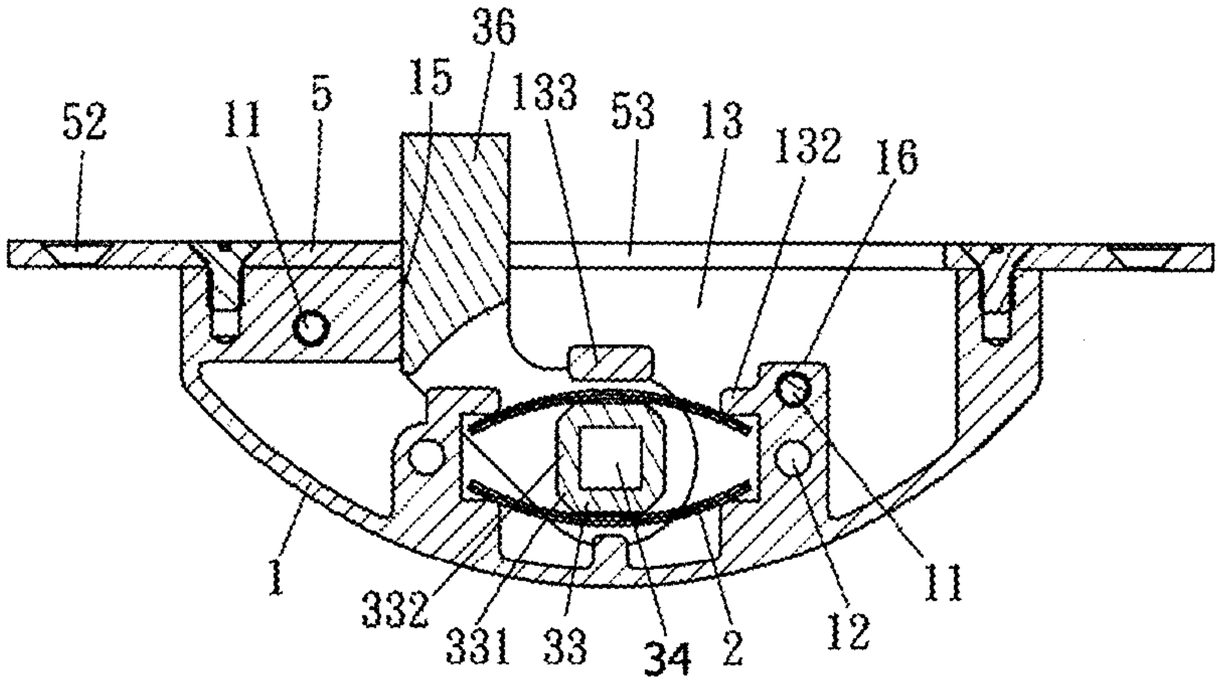

Fig. 3

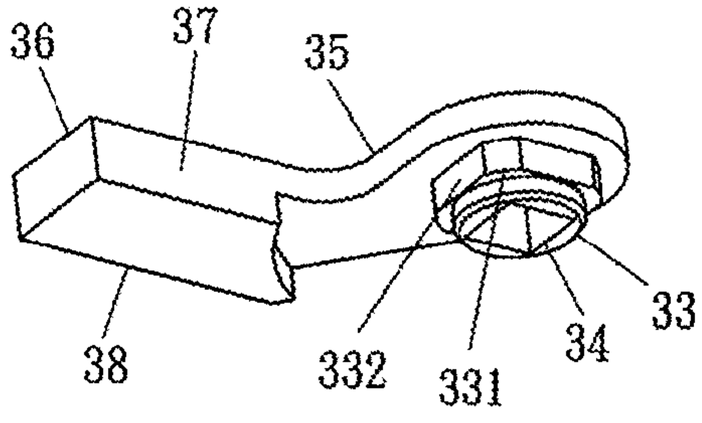

Fig. 4

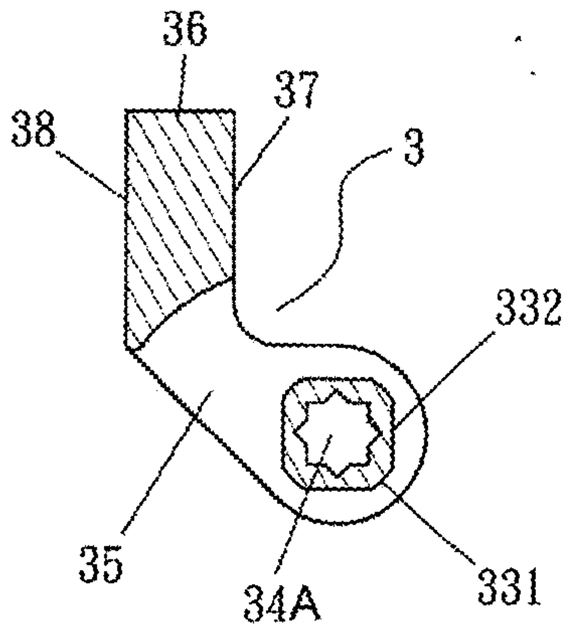

Fig. 4A

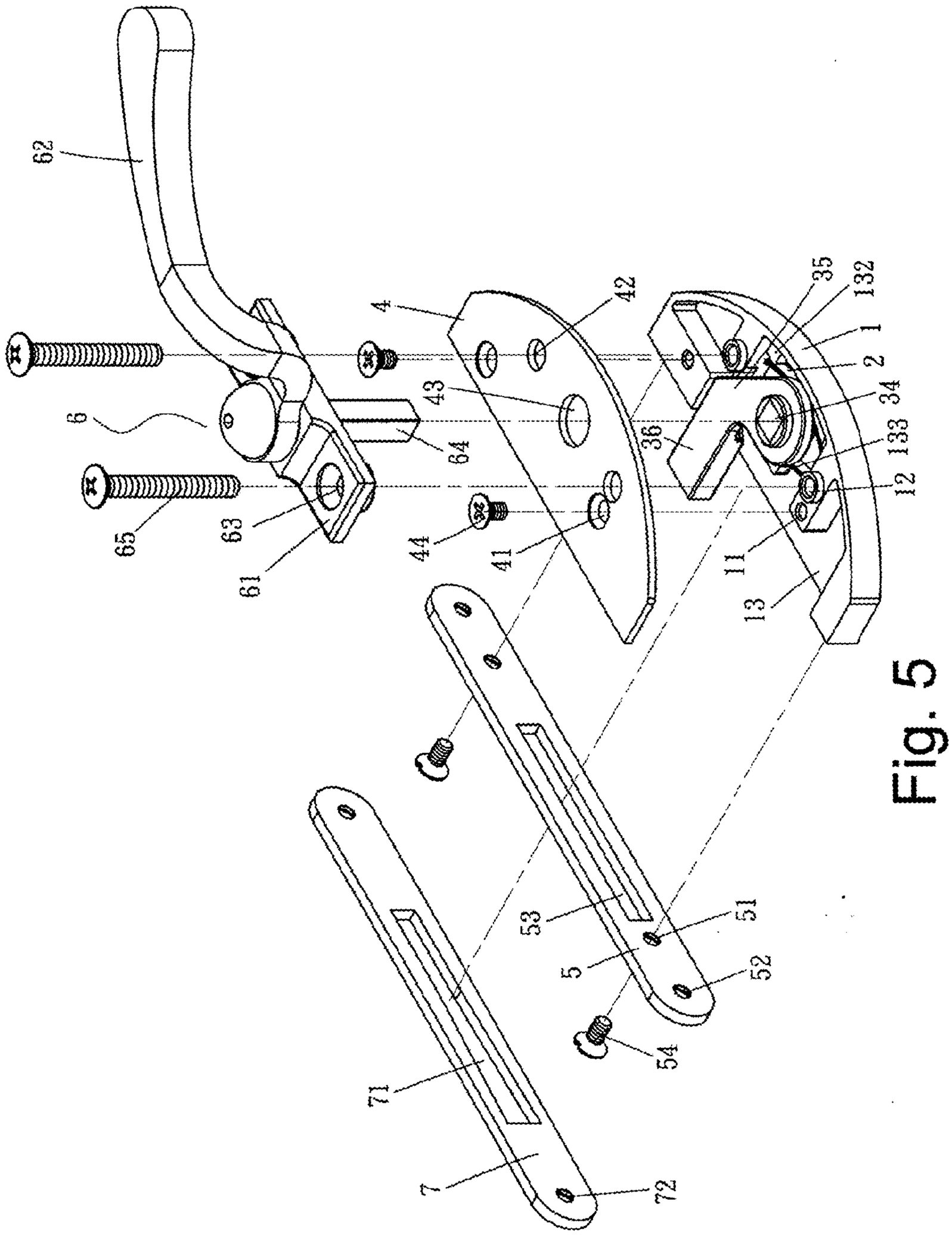
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Fig. 5

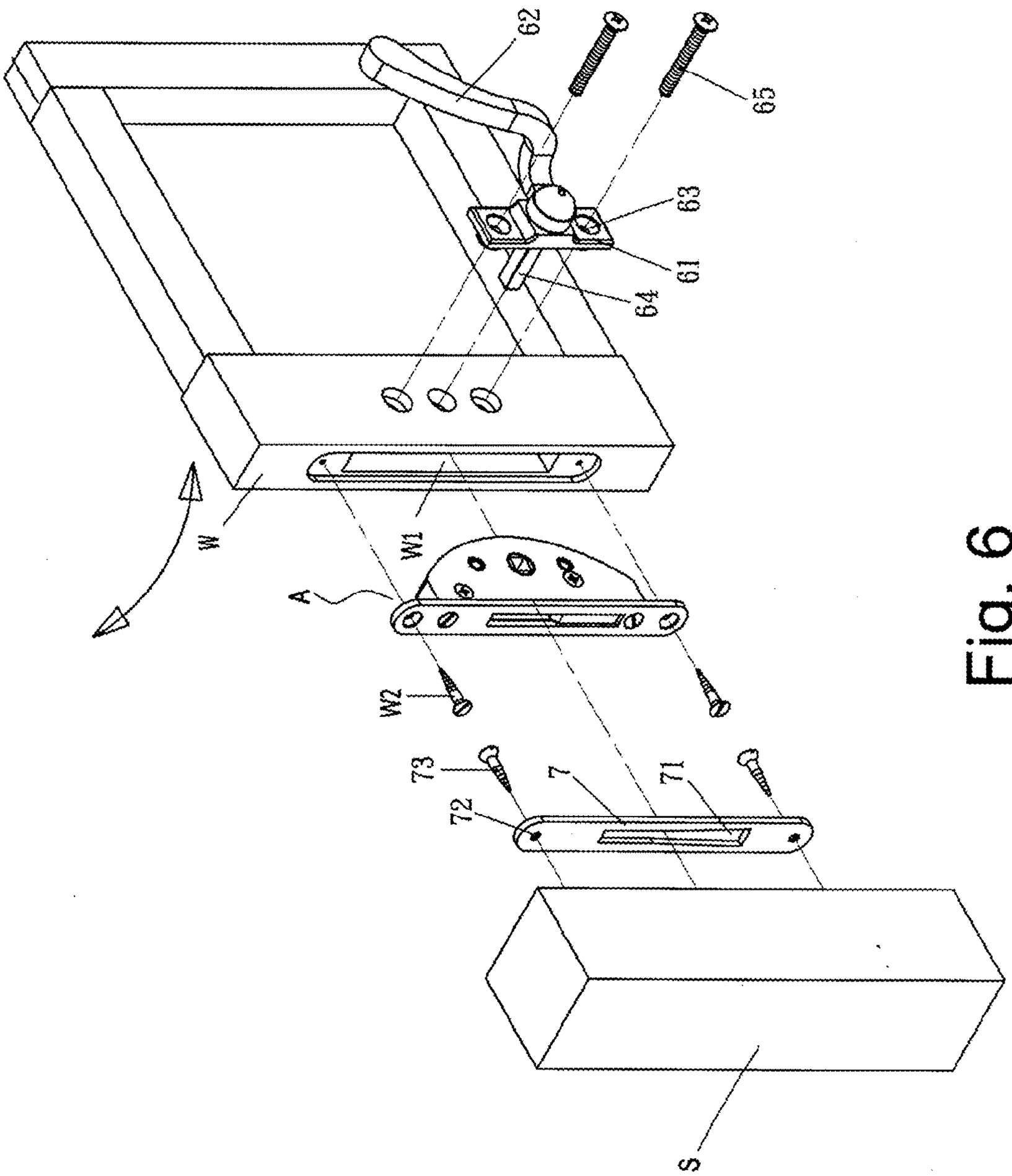
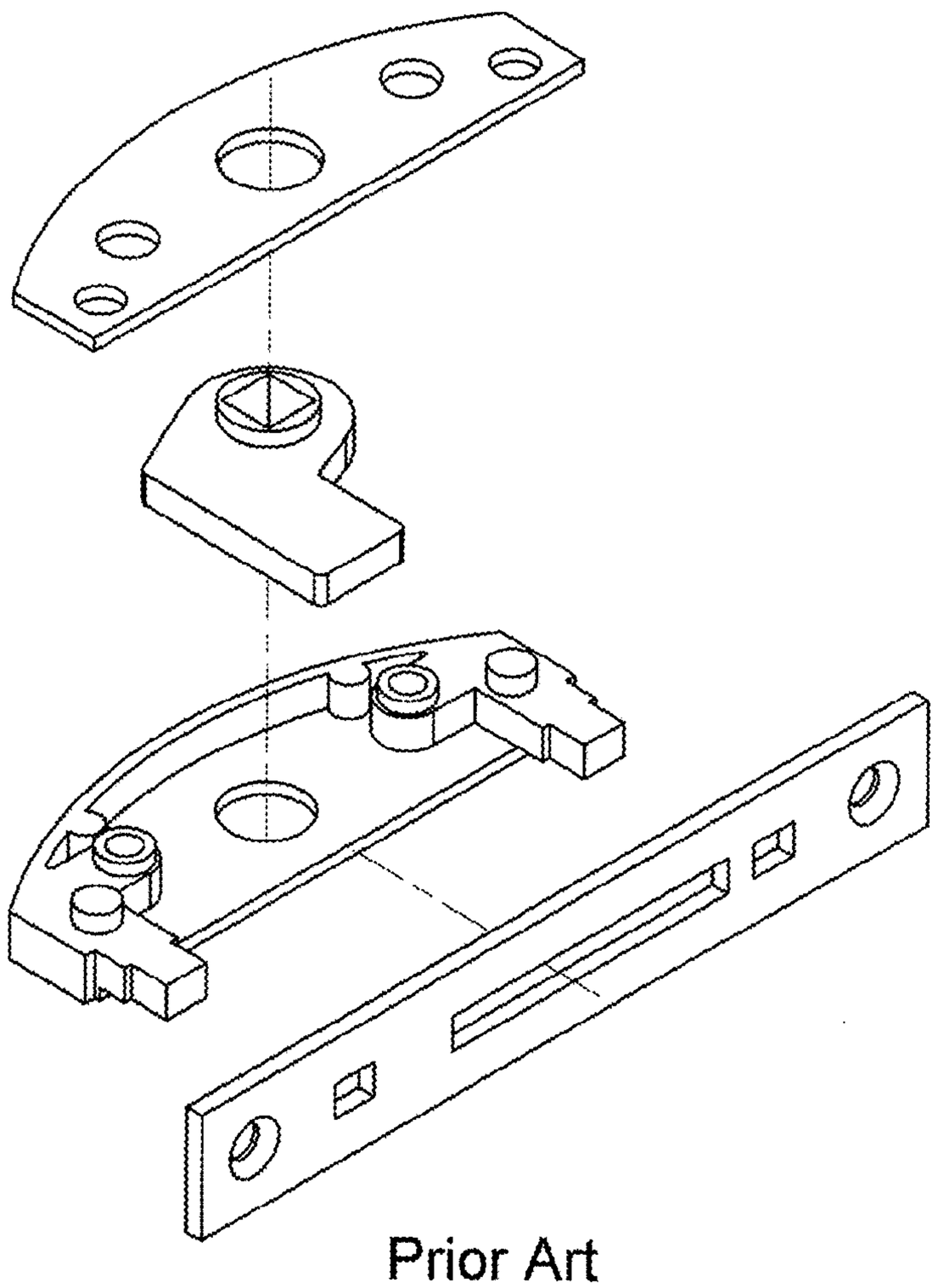
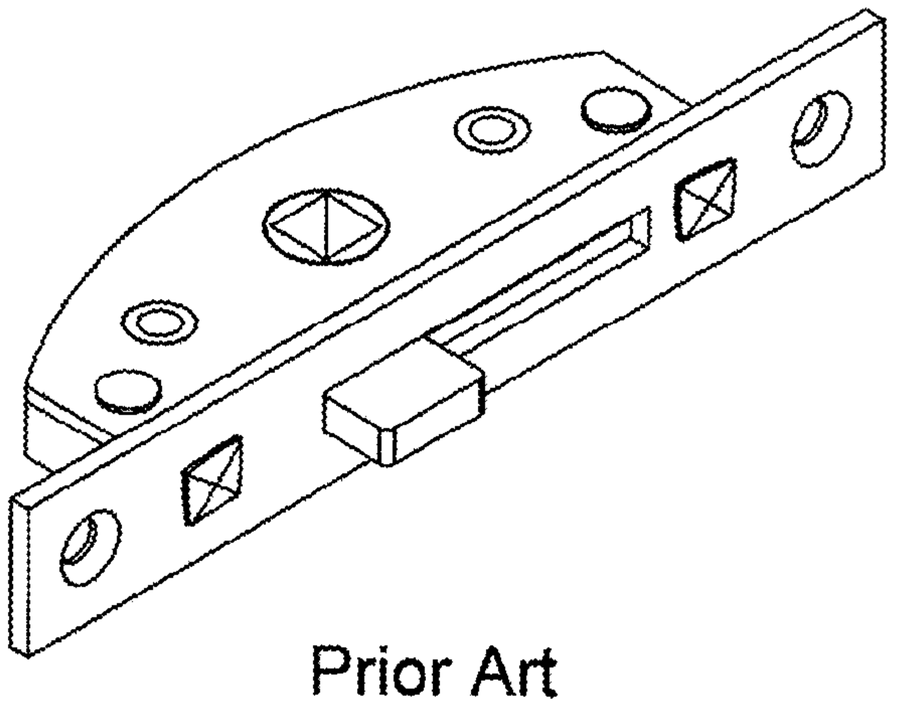


Fig. 6



Prior Art
Fig. 7



Prior Art
Fig. 8

CASEMENT LATCH WITH FIX POSITION

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention relates to window lock latches and more particularly to a casement latch with fix position device.

[0003] 2. Description of Related Art

[0004] A conventional latch for a casement window is shown in FIGS. **7** and **8** and comprises a cover plate, a rotary bolt, a base, and an elongated surface plate. The base and the surface plate are secured together by riveting, and the base and the cover plate are secured together by riveting too.

[0005] However, its rotary bolt is free to rotate and is impossible of stopping the rotary bolt in locked and unlocked positions. As a result, a user is not sure whether the casement window is locked or not. Moreover, the rotary bolt may fall due to gravity when the latch is mounted vertically. As a result, the locking function is compromised. In addition, the riveting is a time consuming and labor intensive process. Further, its yield is low.

[0006] Thus, the need for improvement still exists.

SUMMARY OF THE INVENTION

[0007] It is therefore one object of the invention to provide a casement latch comprising a base including a recess, a shaft hole, first and second sets of two raise plates, a first stop surface on a wall of the recess, and a second stop surface on the wall of the recess, and a slide accepter between the first stop surface and the second stop surface; a surface plate releasably secured to the base and including an intermediate rectangular cut; a strike configured to releasably secure to a casement frame and including an intermediate rectangular cut member; two opposite blade springs each fastened between the raise plates of the first set of raise plates or the second set of raise plates; a rotary bolt including a bolt hook, a shaft short side on a first surface, a shaft long side on a second surface opposing the shaft short side, a square hole through the shaft short side and the shaft long side, four spaced square cut surfaces formed on four edges of the shaft long side, four spaced curve positions each formed between two adjacent ones of the square cut surfaces, a lower interface formed on the bolt hook, and an upper interface formed on the bolt hook wherein the shaft long side is disposed between the blade springs and into the shaft hole; a cover plate releasably secured to the base and including a shaft hole member with the shaft short side rotatably disposed therein wherein the assembled base, the cover plate, and the rotary bolt are configured to dispose in a casement; and a lever assembly releasably secured to the casement, the cover plate, and the base and including a square spindle inserted through the casement and the shaft hole member into the square hole, and a lever configured to co-rotate with the square spindle; wherein in response to a 90-degree clockwise turning the lever, the rotary bolt clockwise turns to cause the curve positions of the shaft long side to further bend the blade springs, cause the square cut surfaces of the shaft long side are clamped the blade springs and cause the first stop surface to stop at the upper interface, thereby fixed the position of the rotary bolt at locking position; and wherein in response to a 90-degree counterclockwise turning the lever, the rotary bolt counterclockwise turns to cause the curve positions of the shaft long side to bend the blade springs, cause the square cut surfaces of the shaft long side are clamped by the blade springs, and cause the second stop surface to stop at the lower interface, thereby fixed the position of the rotary bolt at unlocking position.

[0008] The above and other objects, features and advantages of the invention will become apparent from the following detailed description taken with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is an exploded view of main parts of a casement latch with fix position device according to the invention;

[0010] FIG. **2** is a front view of the assembled casement latch;

[0011] FIG. **2**A is a cross-sectional view of the snap member;

[0012] FIG. **3** is a sectional view taken along line **3-3** of FIG. **2** but with the snap member removed;

[0013] FIG. **4** is a perspective view of the rotary bolt;

[0014] FIG. **4**A is a cross-sectional view of a rotary bolt according to another configuration;

[0015] FIG. **5** is an exploded, all parts of the casement latch and perspective view of the lever assembly;

[0016] FIG. **6** is an exploded view showing the installation of the casement latch in a casement;

[0017] FIG. **7** is an exploded view of a conventional casement latch; and

[0018] FIG. **8** is a perspective view of the assembled casement latch of FIG. **7**.

DETAILED DESCRIPTION OF THE INVENTION

[0019] Referring to FIGS. **1** to **6**, a casement latch A in accordance with the invention comprises the following components as discussed in detail below.

[0020] A base **1** has a flat first edge and a curved second edge opposing the first edge. The base **1** includes two thread holes **11**; two anchor thread through holes **12**; a concave position **13** having a shaft hole **131**, four raise plates **132** at four corners of a virtual rectangle, and a slide accepter **133** between the raise plates **132**; two thread holes **14** at respective ends of the flat first edge; a first stop surface **15** on a wall of the concave position **13** adjacent to one thread hole **11** and one raise plate **132**; and a second stop surface **16** on the wall of the concave position **13** adjacent to the other thread hole **11** and two anchor thread through holes **12**.

[0021] An elongated surface plate **5** includes an intermediate rectangular cut **53**; two thread holes **52** at two ends respectively; two through holes **51** each between one thread hole **52** and the rectangular cut **53** or between the other thread hole **52** and the rectangular cut **53**; and two bolts **54**.

[0022] An elongated strike **7** includes a rectangular cut **71** and two fix holes **72** at two ends respectively. Two elongated blade springs **2** are provided in which one blade spring **2** is disposed between the two raise plates **132** and the other blade spring **2** is disposed between the other two raise plates **132** in a first step of assembly.

[0023] A rotary bolt **3** includes a circular disc **31**; a shaft short side **32** on one surface; a shaft long side **33** on the other opposite surface, the shaft long side **33** having a height greater than that of the shaft short side **32**; four spaced square cut surfaces **332** formed on four edges of the shaft

long side **33**; four spaced curve positions **331** each formed between two adjacent square cut surfaces **332**; a square hole **34** through the shaft short side **32** and the shaft long side **33**, the square hole **34** having a square section (see FIG. **3**) or a double square hole **34**A having a multi-angle interior surface (see another configuration in FIG. **4**A); a bolt sloped surface **35** having one end formed with the circular disc **31**; a bolt hook **36** formed with the other end of the bolt sloped surface **35**; a lower interface **37** on one surface of the bolt hook **36**; and an upper interface on the other surface of the bolt hook **36** opposite to the lower interface **37**. In a second step of the assembly, the shaft long side **33** is inserted through a space between the blade springs **2** into the shaft hole **131** to be held in place.

[0024] A cover plate **4** is shaped the same as the base **1** and includes two fix holes **41**; two through position holes **42**; a shaft hole **43**; and two bolts **44**. In a third step of the assembly, the cover plate **4** is put on the base **1** with the shaft short side **32** rotatably disposed in the shaft hole **43**. In a fourth step of the assembly, each bolt **44** is driven through the fix hole **41** into the thread hole **11** to fasten the cover plate **4** and the base **1** together. In a fifth step of the assembly, the assembled housing (including the base **1** and the cover plate **4**) and the surface plate **5** are attached with the thread holes **14** aligned with the through holes **51** respectively. In a sixth step of the assembly, the bolts **54** are driven through the through hole **51** into the thread hole **14** to fasten the surface plate **5** and the base **1** (i.e., the housing) together with the bolt hook **36** projecting out of the rectangular cut **53**. In a seventh step of the assembly, the rotary bolt **3** are disposed in a cut W**1** for casement latch of a vertical portion of a casement W, two wooden screws W**2** are driven through the thread holes **52** into the casement W to fasten them together, and two wooden screws **73** are driven through the fix holes **72** into a casement frame S to fasten the strike **7** and the casement frame S together.

[0025] A lever assembly **6** includes a base plate **61**; two fix holes **63** at two ends of the base plate **61** respectively; a square spindle **64** having a square section projecting out of an inner surface of the plate **61**, the square spindle **64** inserted through the shaft hole **43** into the square hole **34** to be held in place; a lever **62** having one end co-rotated with the square spindle **64**; and two bolts **65** driven through the fix holes **63**, the casement W, and the through position holes **42** into the anchor thread through holes **12** to fasten the lever assembly **6**, the casement W, the cover plate **4** and the base **1** together in which the square spindle **64** is inserted through the casement W into the square hole **34** so that a rotation of the lever **62** rotates the square spindle **64**.

[0026] A locking operation of the invention is discussed below. An operator may clockwise turn the lever **62** and thus the square spindle **64** which clockwise turns the rotary bolt **3**. And in turn, the blade springs **2** are bent further by the curve positions **331** of the shaft long side **33**. The turning of the rotary bolt **3** is 90-degree. At the end of the turning two opposite ones of the square cut surfaces **332** of the shaft long side **33** are clamped by the blade springs **2**. Also, the upper interface **38** is stopped by the first stop surface **15**. As a result, the rotary bolt **3** is locked and fastened at the locked position. Moreover, the bolt hook **36** inserts through the rectangular cut **71** into the recess of the casement frame S and a vertical portion of the casement W draws against the casement frame S to lock the casement window.

[0027] It is envisaged by the invention that the rotary bolt **3** is held in place because the opposite square cut surfaces **332** of the rotary bolt **3** are clamped by the blade springs **2** (see FIG. **5**).

[0028] To the contrary, the operator may counterclockwise turn the lever **62** and thus the square spindle **64** which counterclockwise turns the rotary bolt **3**. And in turn, the blade springs **2** are less bent by the curve positions **331** of the shaft long side **33**. The turning of the rotary bolt **3** is 90-degree. At the end of the turning two opposite ones of the square cut surfaces **332** of the shaft long side **33** are clamped by blade springs **2**. Also, the lower interface **37** is stopped by the second stop surface **16**. As a result, the rotary bolt **3** is unlocked. Moreover, the bolt hook **36** retracts out of the recess of the casement frame S and the rectangular cut **71**. The vertical portion of the casement W disengages from the casement frame S to unlock the casement window.

[0029] It is envisaged by the invention that the rotary bolt **3** is held in place because the opposite square cut surfaces **332** of the rotary bolt **3** are clamped by the blade springs **2**.

[0030] While the invention has been described in terms of preferred embodiments, those skilled in the art will recognize that the invention can be practiced with modifications within the spirit and scope of the appended claims.

What is claimed is:

1. A casement latch comprising:

a base including a recess, a shaft hole, first and second sets of two raise plates, a first stop surface on a wall of the recess, and a second stop surface on the wall of the recess, and a slide accepter between the first stop surface and the second stop surface;

a surface plate releasably secured to the base and including an intermediate rectangular cut;

a strike configured to releasably secure to a casement frame and including an intermediate rectangular cut member;

two opposite blade springs each fastened between the raise plates of the first set of raise plates or the second set of raise plates;

a rotary bolt including a bolt hook, a shaft short side on a first surface, a shaft long side on a second surface opposing the shaft short side, a square hole through the shaft short side and the shaft long side, four spaced square cut surfaces formed on four edges of the shaft long side, four spaced curve positions each formed between two adjacent ones of the square cut surfaces, a lower interface formed on the bolt hook, and an upper interface formed on the bolt hook wherein the shaft long side is disposed between the blade springs and into the shaft hole;

a cover plate releasably secured to the base and including a shaft hole member with the shaft short side rotatably disposed therein wherein the assembled base, the cover plate, and the rotary bolt are configured to dispose in a casement; and

a lever assembly releasably secured to the casement, the cover plate, and the base and including a square spindle inserted through the casement and the shaft hole member into the square hole, and a lever configured to co-rotate with the square spindle;

wherein in response to a 90-degree clockwise turning the lever, the rotary bolt clockwise turns to cause the curve positions of the shaft long side to further bend the blade springs, cause the square cut surfaces of the shaft long

side are clamped the blade springs and cause the first stop surface to stop at the upper interface, thereby fixed the position of the rotary bolt at locking position; and

wherein in response to a 90-degree counterclockwise turning the lever, the rotary bolt counterclockwise turns to cause the curve positions of the shaft long side to bend the blade springs, cause the square cut surfaces of the shaft long side are clamped by the blade springs, and cause the second stop surface to stop at the lower interface, thereby fixed the position of the rotary bolt at unlocking position.

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