W. E. PUTNAM.

FASTENER FOR SWINGING WINDOWS AND THE LIKE.

APPLICATION FILED MAY 11, 1921.

1,432,784.

Patented Oct. 24, 1922.

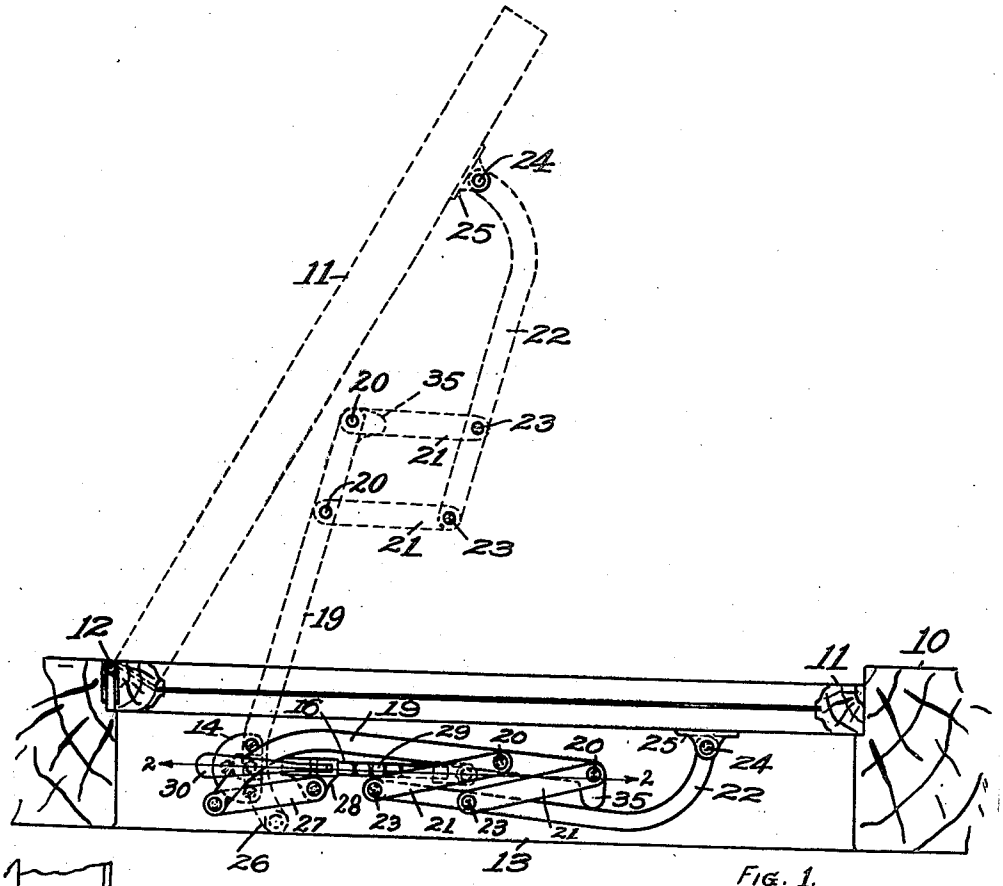


FIG. 1.

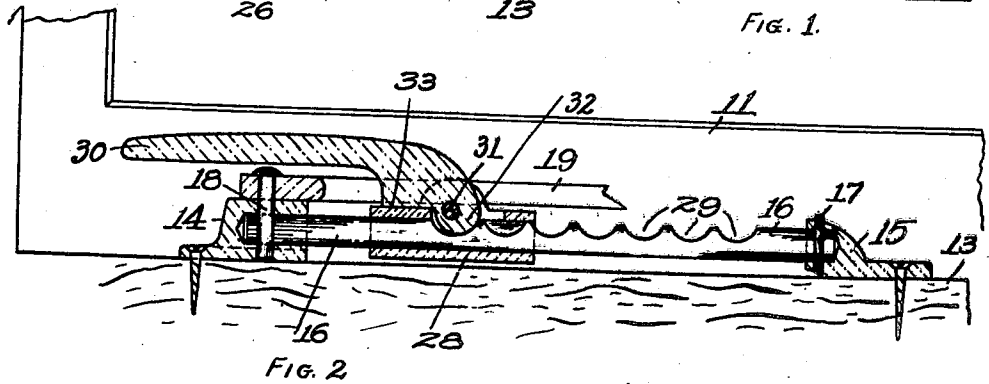


FIG. 2.

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UNITED STATES PATENT OFFICE.

WILLIS E. PUTNAM, OF WORCESTER, MASSACHUSETTS.

FASTENER FOR SWINGING WINDOWS AND THE LIKE.

Application filed May 11, 1921. Serial No. 468,777.

To all whom it may concern:

Be it known that I, WILLIS E. PUTNAM, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Fastener for Swinging Windows and the like, of which the following is a specification.

This invention relates to a device for securing a swinging window, door, or the like, in closed position and in any one of a number of partly open positions, including one at right angles to the plane of the supporting casing.

The principal objects of the invention are to provide a structure that can be made mainly of simple pieces of flat metal and that will fold into a compact form when the window is closed and capable of holding the window, and in fact locking it, in different positions at an angle to its casing; to provide such a construction with means for exerting pressure to force the window positively into absolutely closed position even if it encounters resistance from the presence of foreign parts or swelling or warping of the window; to provide an improved arrangement of links and levers for connecting the window with its casing, and an improved locking device for the above mentioned purpose and for locking the window in partly open positions.

The invention also involves improvements in details of construction as will appear.

Reference is to be had to the accompanying drawings in which—

Fig. 1 is a plan of a window sill showing the window itself and the uprights of the casing in section and illustrating a preferred embodiment of this invention applied thereto, and

Fig. 2 is an enlarged sectional view of the locking device therefor taken along the line 2—2 of Fig. 1.

This invention is capable of use in many places but the most advantageous place of employment is for a swinging window. I have shown it applied to a window casing 10 having a window sash or frame 11 swinging preferable on vertical pivots represented by hinges 12, only one of which appears in the drawing.

On the sill 13 of the window I have shown a pair of fixed brackets 14 and 15. These are drilled out on their adjacent ends to provide openings for supporting a cylindrical guide rod 16. This rod is held at one end by a pin 17 and at the other end by a pivot stud 18. On this pivot stud is pivoted a lever 19. The long arm of this lever is provided with two studs or rivets 20 to which are pivoted two equal links 21. Another lever 22 is pivoted by two studs or rivets 23 on the ends of these links. The distance between the studs 23 is the same as that between the studs 20. The relationship of the four studs 20 and 23 is such that the two links 21 and the ends of the levers 19 and 22 retained between them will always constitute a parallelogram in all positions of the parts. In other words, a parallel motion is provided for. This lever 22 extends beyond the outer link 21 parallel to the adjacent arm of the lever 19 for quite a distance and then is turned outwardly so that its end can be pivoted by a stud 24 on a bracket 25 on the window sash 11.

Without considering the rest of the mechanism it will be obvious that the sash can swing on its hinges and that as it swings this leverage and parallel motion inside will swing from the full line position in Fig. 1 to the dotted line position, and in fact beyond it, to a position in which the sash is at right angles to the plane of the casing.

The motion of the sash results in swinging the inner end 26 of the lever 19 through a certain arc and that is employed in the present case for the purpose of locking the sash. For that reason the extreme end of this arm 26 is provided with a link 27 which is pivotally connected with a slide 28 moving on the rod 16. The swinging of the sash carries the slide back and forth on this rod in a manner that will be obvious from the inspection of Fig. 1.

The rod 16 is provided with a plurality of depressions 29 spaced apart as desired for the purpose of regulating the positions at which the window sash can be held stationary. These depressions are shown as arc shaped and as symmetrical. On a stud 31 on the slide 28 is pivoted a locking lever 30 which has a locking surface 32. This surface is of the same shape as the notches or depressions 29 but arranged eccentrically so as to afford a leverage, not only to lock the sash but to move it positively into and out of locking position. This locking lever also has a stop 33 for engaging a surface on the collar 28 when it is in its locked position.

The depression 29 at the extreme left is

so located that when the eccentric portion 32 is forced into it, the sash will be forced thereby into its fully closed position. The eccentric is so constructed that in moving down into its locked position shown in Fig. 2, it moves the slide to the left and, in fact, exerts considerable pressure in that direction. This forces the link 27 and the short end of the lever 19 to the left tending to swing the lever outwardly about its pivot 18 and its outer end inwardly. I have placed on this end a projection 35 which comes into contact with the outer surface of the lever 22 as shown in Fig. 1 in full lines and positively moves the latter lever inwardly with a high degree of pressure. In this way, if the wood is swollen or any slight obstacle is encountered the operator can positively force the window closed by leverage applied at the free end of the sash and with a strong force on account of the cam or eccentric employed and the leverage system working through the projection 35.

This constitutes a valuable addition to this art because it is usual to make window fasteners of such a nature that the operator has to look out to get the window closed by pulling it into place and to lock it only after he has done that. By this construction the operator has only one thing to attend to, namely, to lock the window and that pulls it automatically into its closed position. If he cannot do that on account of some obstruction that absolutely prevents it he is apprised of the fact by his inability to force the locking lever 30 down to its horizontal position.

It is to be noted also that starting with the parts in full line position in Fig. 1 the opening of the window cannot be accomplished by pushing on it. It has to be unlocked first. Furthermore, in unlocking it the lever 30 is raised which in itself, on account of the eccentricity of the locking element 32, starts the window sash away from the casing slightly. This is accomplished on account of the fact that the slide 28 moves to the right and therefore the lever 19 swings outwardly at its long end. This releases the window from its casing so that if it sticks the operator does not have to release it by applying force or blows to the window sash itself. This also is a feature of importance as there is a natural tendency to strike a window which does not easily move away from its seat when it is desired to open it.

The lever 22 is spaced at all times from the window and therefore constitutes a convenient handle for use in opening and closing the window.

The leverage system which is employed is of such a nature as to take up very little room and is capable of being formed entirely of flat pieces of metal so that it has great strength with comparatively little weight. It can be finished in any desired way to protect it from the weather and constitutes a durable, simple and effective device for the purposes above specified. Where I have specified a sash it is to be understood that I wish to cover also the use of the same parts on a door, cover, or other pivoted frame.

Although I have illustrated and described only a single form of the invention, I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a sash fastener, the combination with a window casing and a window sash pivoted thereto, of a lever pivoted on a stationary axis parallel with the axis on which the sash swings, a second lever pivoted to the sash and having a portion parallel with the first named lever, and parallel motion connections between the adjacent ends of said levers to keep them always in a position parallel to each other while the sash swings.

2. In a device of the character described, the combination with a casing and a frame pivoted thereto adapted to seat therein, of a lever pivoted on said casing on an axis parallel with the axis on which the sash swings and projecting toward the frame on a parallel axis, a second lever pivoted to the frame and having a portion parallel with the first named lever, and a parallel motion connection between the adjacent ends of said levers to keep them always in a position parallel to each other while the frame swings.

3. In a device of the character described, the combination with a casing and a frame pivoted thereto adapted to seat therein, of a lever pivoted on said casing and projecting toward the frame, a second lever pivoted to the frame and having a portion parallel with the first named lever, and two equal parallel links each pivoted to adjacent ends of said levers at equal distances apart and a distance from the axes on which said levers are pivoted to keep the levers always in a position parallel to each other as the frame swings from closed to open position.

4. In a device of the character described, the combination with a casing and a frame pivoted thereto, of a lever having a curved end pivoted on a fixed axis, a second lever having an oppositely curved end pivoted to the frame and having a portion parallel with the first named lever, a parallel motion connection between the adjacent ends of said levers at a distance from said curved ends to keep them always in a position parallel to each other as the frame swings, and means connected with the inner end of the

first named lever for locking that lever, and therefore the frame, in different angular positions.

5. In a device of the character described, the combination with a swinging frame and a casing to which it is connected, of a leverage system pivoted on the casing and pivotally connected with the frame and comprising parallel motion connections, a link connected with said leverage system, a slide connected with the link, a guide fixed with respect to the casing parallel with the plane of the frame, and means carried by said slide for locking the slide to the guide and thereby locking the frame against pivotal motion.

6. In a device of the character described, the combination with a leverage system for connecting a casing and a pivoted frame, said system being pivoted on an axis parallel with the axis on which the frame swings, of a link connected with said leverage system, a slide connected with said link to be moved thereby, a locking lever pivoted on the slide and having a locking portion, said casing being provided with a guide having a series of depressions for receiving the locking portion of said locking lever, each depression fitting the locking portion but their relation being eccentric, whereby when the locking lever is moved to lock or unlock the frame it will first swing it through a short arc.

7. In a device of the character described, the combination of a leverage system for connecting a casing and a pivoted frame, said system having its pivots parallel with the axis on which frame swings, a link connected with said leverage system, a slide connected with said link to be moved thereby, a locking lever pivoted on the slide and having an eccentric locking portion, said casing being provided with a member having a series of arcuate depressions for receiving the eccentric portion of said locking lever, whereby when the locking lever is moved to lock the frame it will first swing it inwardly through a short arc.

8. In a device of the character described, the combination of a casing and a frame swingingly mounted thereon, with a system of levers for connecting the frame and casing, means for locking said levers, and therefore the frame, in a plurality of positions relative to the casing, and means whereby when the locking device is moved to unlock it the frame will thereby be moved slightly outwardly.

9. In a device of the character described, the combination of a casing and a frame swingingly mounted thereon, with a system of levers for connecting the frame and casing, means for locking said levers, and therefore the frame, in a plurality of positions relative to the casing, and means whereby when the locking device is moved to lock the frame it will positively swing it inwardly.

10. In a device of the character described, the combination with a casing and a frame pivoted thereto adapted to seat therein, of a lever pivoted on said casing and projecting toward the frame, a second lever pivoted to the frame and having a portion parallel with the first named lever, a parallel motion connection between the adjacent ends of said levers, a locking device connected with the first named lever and comprising means whereby when the frame is locked thereby it will be positively swung inwardly, said means comprising a projection on the first named lever in position to engage the second lever when the parts are folded into closed position.

11. In a device of the character described, the combination with means for connecting a casing and a pivoted frame, of a link connected with said means, a slide connected with said link to be moved thereby, a locking lever pivoted on the slide and having a locking portion, said casing being provided with a guide having a series of depressions for receiving the locking portion of said locking lever, each depression fitting the locking portion but their relation being eccentric, whereby when the locking lever is moved to lock or unlock the frame it will first swing it through a short arc.

In testimony whereof I have hereunto affixed my signature.

WILLIS E. PUTNAM.