Dec. 20, 1927. 1,653,011

B. JAHN ET AL

WINDOW FASTENER

Filed Oct. 16, 1924

Fig. 1

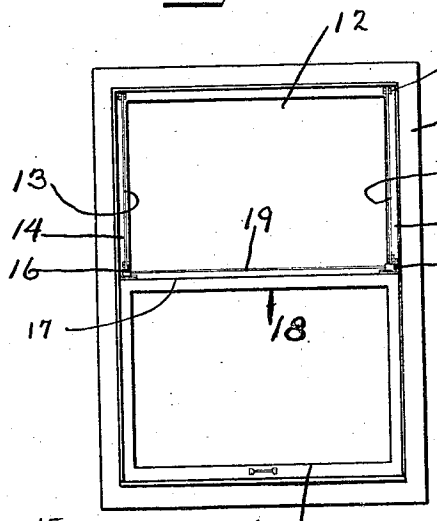


Fig. 2

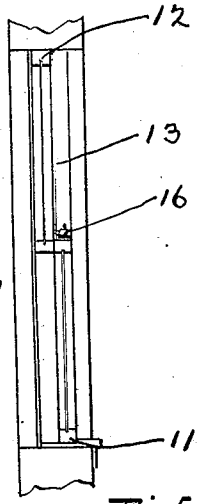


Fig. 5

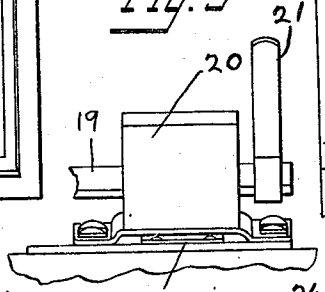


Fig. 4

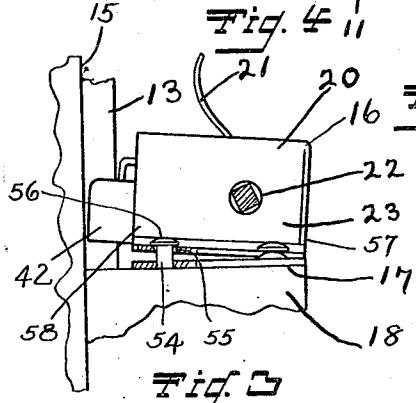


Fig. 10

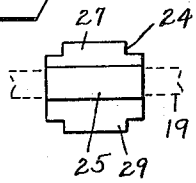


Fig. 6

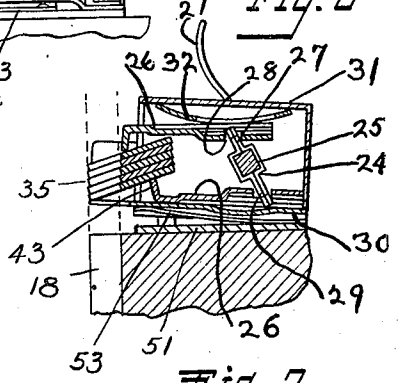


Fig. 9

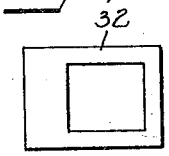


Fig. 7

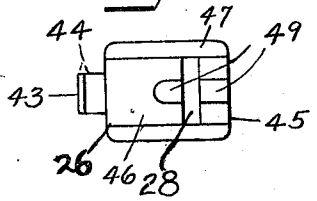


Fig. 8

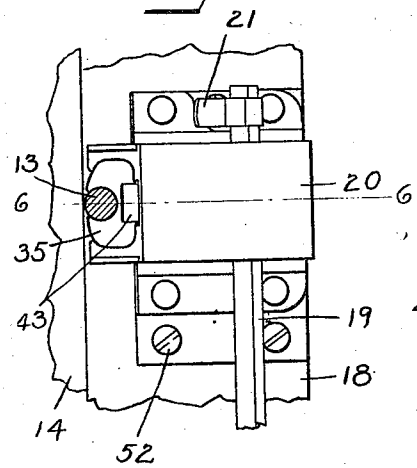
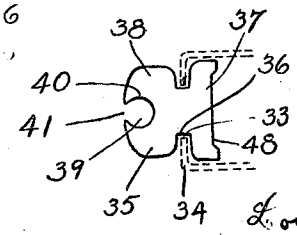


Fig. 8



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UNITED STATES PATENT OFFICE.

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WINDOW FASTENER.

Application filed October 16, 1924. Serial No. 743,878.

Our invention relates to improvements in window fasteners, of the form that is applied to windows having a lower and an upper sash that are movable relatively one to the other in ordinary and well known manner, and the object of our improvement is simplicity and economy in construction and convenience and efficiency in use.

In the accompanying drawing:—

Figure 1 is an inside view of a window having a lower and an upper sash that is equipped with our improved window fastener.

Figure 2 is a longitudinal sectional view of the same, showing the two sashes in section and the relative location of the elements of the window fastener.

Figure 3 is a plan view on an enlarged scale of the lock structure that is shown at the right in Fig. 1, the keeper-rod being shown in section.

Figure 4 is a side elevation of the same, the tripping bar being shown in section.

Figure 5 is a rear elevation of the same.

Figure 6 is a sectional view on the line 6—6 of Fig. 3.

Figure 7 is a plan view of one of the slides.

Figure 8 is a plan view of one of the tumblers.

Figure 9 is a plan view of the main fastener spring.

Figure 10 is a side face view of the tripping member.

Our improved window fastener is applied to a window having a lower sash 11 and an upper sash 12 and is preferably applied thereto in duplex form with a single tripping-bar for shifting the fastener mechanism, involving the use of a complete fastener device on each side of the window.

Thus in the case of the window 10 a keeper-rod 13 is applied to the inside face 15 of each of the two side-bars 14 of the upper sash 12; for cooperating with each of said keeper-rods 13 a complete fastener device 16 is mounted on the upper face 17 of the top crossbar 18 of the lower sash 11; a single tripping-bar 19 for operating both of said fastener devices 16 extends across from side to side, in spaced relation to said crossbar 18, and through the two housings 20 for the fastener mechanisms; and a single handle 21 in the form of a crank may be mounted on one of the ends of said tripping-bar.

The tripping-bar 19 is of square form of cross-section; extends through circular bearing-openings 22 in the side walls 23 of said housings 20; and operatively supports a trip member 24 that is housed within the housing 20.

Said trip member 24 is made, as shown, of two plates that are jointed together generally face to face with a swelling adjacent the middle to provide a socket 25 to fit the bar 19. Said trip member 24, furthermore, is shifted back and forth by the bar 19 across the vertical position and has upper and lower wings for operating the upper and lower slides 26. Thus the upwardly directed wing 27 is engaged in a cross-slot 28 in the upper slide 26 and the downwardly directed wing 29 is similarly engaged with the lower slide 26.

The two slides 26 are similar; the lower slide 26 is moved back and forth along the bottom wall or base 30 of the housing 20; the upper slide 26 is similarly moved back and forth in the upper portion of the housing 20 and in spaced relation to the top wall 31 thereof; and a spring 32 is positioned in the space between said upper slide 26 and top wall 31.

The tripping-bar 19 and adjacent parts are positioned in what may be designated as the rear portion of the housing 20. Considering the front or forward portion of the housing 20, the front wall structure thereof is divided by a vertical slot 33 into two side wall parts 34. A set of tumblers 35 project across said front wall and they are individually slotted at the sides 36 for engaging with said side wall parts 34. The relatively wide rear portions 37 of the tumblers are housed within the interior space of the housing 20 and projecting outwardly from said housing 20 are the relatively wide plate-like heads 38. The tumblers 35 are made of sheet metal and the heads 38 have circular openings or recesses 39 for cooperating with the keeper-rod 13, the latter being of circular form of cross-section. The locking is effected by the inter-engaging of the walls 40 of the recesses 39 and the rod 13. Said walls 40 may lack a complete circumference, as shown,

there being a gap 41 on the front side that is opposed to the face 15 of the sash-bar 14, to provide clearance therefor.

Side blinds 42 extending upwardly from the bottom wall or base 30 may be provided, as shown, to cover and conceal the outwardly projecting ends or heads 38 of the tumblers 35.

As shown, there are five tumblers 35 superimposed one upon the other and these are operatively housed between the slides 26 so as to be positioned thereby, being tilted back and forth as the slides are moved longitudinally back and forth.

Such tilting movements of the tumblers 35 are governed and controlled by the engagement of the slotted sides 36 with the side wall parts 34 and the engagement of the locking recess 39 with the keeper-rod 13.

For cooperating with the tumblers 35 the slides 26 have an inwardly directed nose 43 that is supported by a neck 44 of reduced width to pass through the slot or open space 33 between the side parts 34 of the front wall.

The body portion 45 of the slide 26 may have the middle portion 46 raised relatively to the side portions 47, said middle portion 46 being thus in the form of a longitudinally directed raised platform. The rear end portion or tail 37 of the upper and also of the lower tumbler is opposed to said body portion 45 and the rear edge 48 may be recessed to correspond, as shown. Actually, all of the tumblers are made alike. The slides 26, furthermore, may be provided with other rib-like enlargements 49 at the middle and on each side of the cross-slot 28 and adjacent the contact points with the operating wings 27 and 29 of the trip member 24.

The keeper-rod 13 is secured to the sash-bar 14 in any proper manner so as to be rigidly held in position, as by means of lugs 50 that are secured to the rear faces of the same.

All of the parts that are necessary for locking have been described and these parts are sufficient to permit of unlocking under ordinary or normal conditions.

In the position shown in Fig. 6 the tumblers are inclined downwardly and outwardly from the divided front wall of the housing, the lower slide being withdrawn inwardly into the interior of the housing, and the upper slide is projected outwardly or forwardly so that the nose 43 is outside the housing. Also, the side wall parts 34 of the housing and the recesses 36 of the tumblers are active. The engagement of the tumblers with the keeper-rod in this position is such as to effect the locking of the sashes against opening or an opening movement. That is to say, if the sashes are set for a partial opening of the window the lock will prevent further opening. If the window is completely shut it will be locked in such position.

Further consideration of some of the movements and operations permitted will be considered. The basis of these is the fact that the fastener permits of relative one-way movement of the sashes freely, but prevents reverse movement.

Thus, considering the position of the parts as shown in Fig. 6, if free so far as the sashes are concerned, the fastener structure can be freely moved downwardly along the rod 13 but will hold in the reverse direction. The tumblers will act as one-way or ratchet devices. This permits of manipulating the upper sash from the lower sash for partially or fully closing the same by corresponding to and fro movements of the lower sash. This is an advantage with high windows, and obviates the need of the use of a long pole for moving the upper sash.

Under special conditions or certain critical conditions that may occur with the parts in the fully locked condition we find that there may be a tendency to jam or bind, so as to prevent free and easy unlocking. The effect of this tendency we have overcome in the following manner:—

Intermediate the bottom wall or base 30 and the top face 17 of the top cross-bar 18 of the lower sash 11 there is interposed a sub-base 51 that is secured in position by means of the screws 52 and a leaf-spring 53, the latter being between the two bases. The tendency of the spring 53 is to elevate the housing 20 and parts housed therein. Such elevation or tilting is limited in the structure shown by means of suitable studs 54 that extend upwardly from the sub-base 51, through slots 55 in the opposed bottom wall 30, and have heads 56 opposed to the upper faces of said bottom wall.

As shown the studs 54 are arranged in two pairs and the pair adjacent the rear end 57 of the housing 20 are shorter than the pair adjacent the front or divided end wall 34. Thus the housing is normally positioned at an inclination to the face 17 of the sashbar 18, with the front end portion 58 higher than the rear end portion 57.

The structure described permits of a slight though appreciable yielding of the housing, such as to permit of overcoming the jammed or binding condition mentioned.

With the parts in the position of Fig. 6 and under the described jammed conditions, turning the tripping-bar 19 operates to effect a rocking of the housing 20 momentarily so that the relations of the individual parts are disturbed so as to free the parts.

We claim as our invention:—

1. In a window fastener comprising a rod for the upper sash and a fastener structure for the lower sash having a set of tum-

blers for engaging with said rod, a housing for said tumblers, said tumblers being superimposed one upon the other and projected through an opening in the front wall of said housing and being slotted at the sides for cooperating with the border walls of said opening, an upper and a lower slide operatively housed within said housing and cooperating respectively with the upper and lower of said tumblers, a tripping member for operating said slides, and a tripping-bar supported by the side walls of said housing and operatively supporting said tripping member.

2. In a window fastener structure for use in combination with an upper and a lower sash of a window, a rod for being mounted along the face of said upper sash, a fastener having means for gripping said rod and having a base, a sub-base mounted on said lower sash, a spring tending to separate said base and sub-base, and means for limiting such separation.

3. In combination in a window fastener, a rod for the upper sash, a fastener structure having tumblers for engaging said rod and mechanism for manipulating said tumblers, and means for supporting said fastener structure from the lower sash, said means comprising a spring for permitting of limited rocking of the fastener structure relatively to said lower sash.

4. In a window fastener for use with an upper and a lower sash comprising a vertically directed rod on the upper sash and a housing mounted on the lower sash, mechanism supported by said housing comprising tumblers that are operative to lock with said rod when directed at an inclination thereto, means for supporting said tumblers that serve to permit of shifting the inclination from one side to the other side of the horizontal, and a bar extending laterally from said housing serving as a tripping device for operating said means.

5. In a window structure, an upper and a lower sash, a pair of rods mounted one on each side of said upper sash, a fastener for each of said rods mounted on said lower sash and provided with mechanism for cooperating with the adjacent rod, said mechanism having moving parts for being shifted for changing the operative relations of said fasteners and rods, and a single rod serving as the means for effecting such shifting of said moving parts.

6. A window sash controlling mechanism including in combination rods, one on each side of the upper sash, gripping devices on the lower sash traversing said rods and adapted to be set to grip the rods to prevent either relative upward movement or relative downward movement of the lower sash while permitting free movement in the opposite direction, said gripping devices being operatively connected to work always together in one direction or the other.

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