Feb. 13, 1945. J. E. LUNDHOLM 2,369,584

CLOSURE FASTENER DEVICE

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Fig. 1.

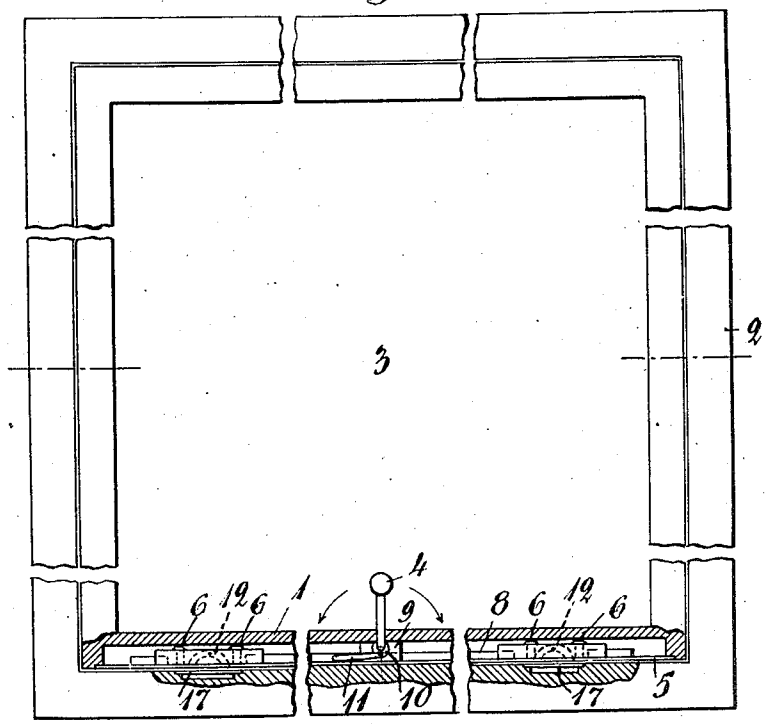


Fig. 9.

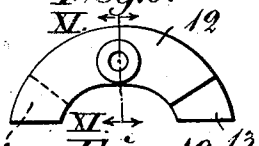


Fig. 11.

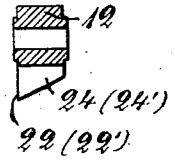


Fig. 10.

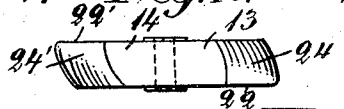


Fig. 12.

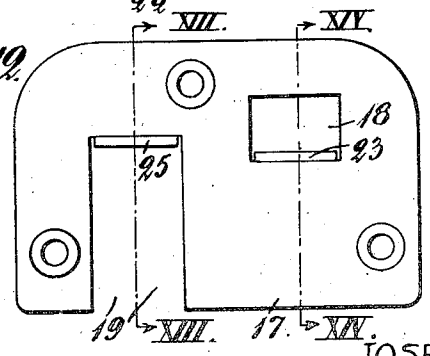
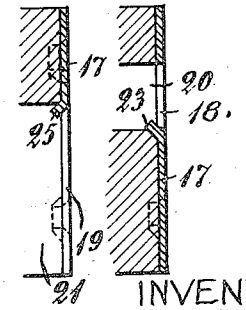


Fig. 13. Fig. 14.



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Fig. 2.

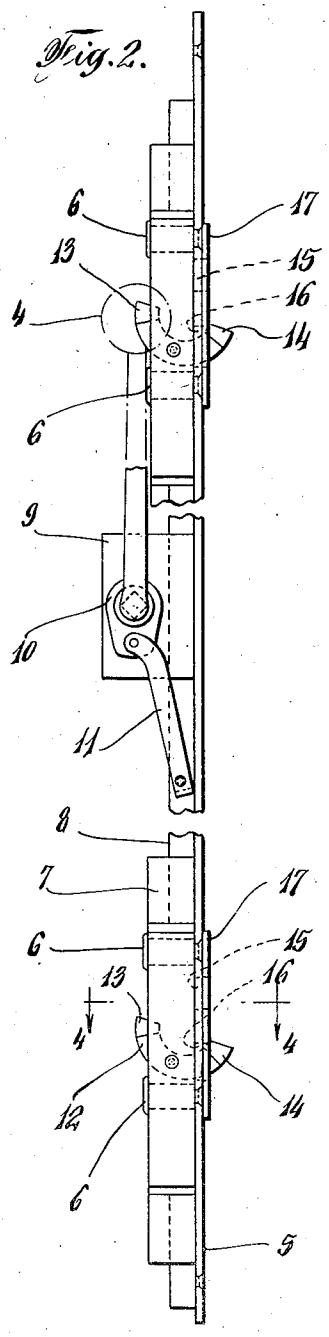


Fig. 3.

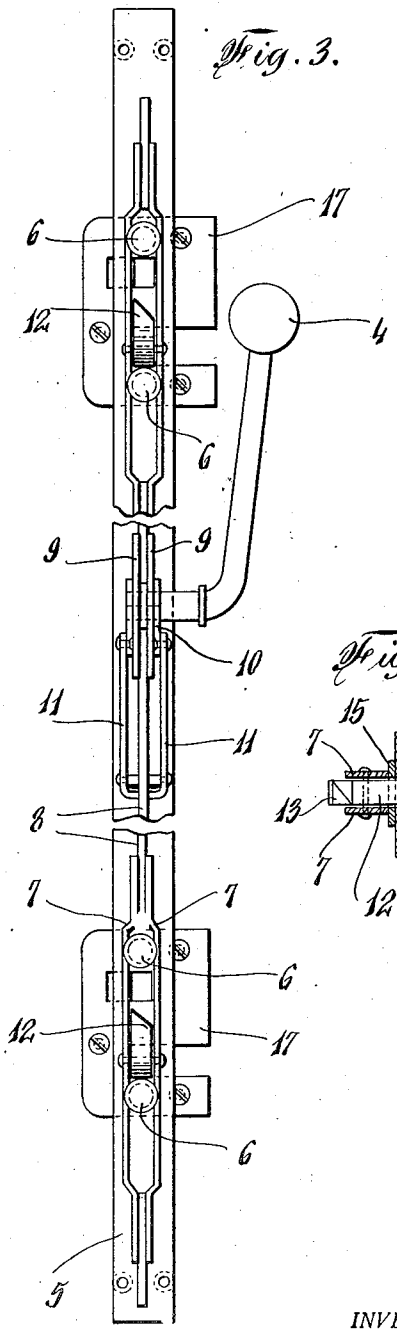


Fig. 4.

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Fig. 5.

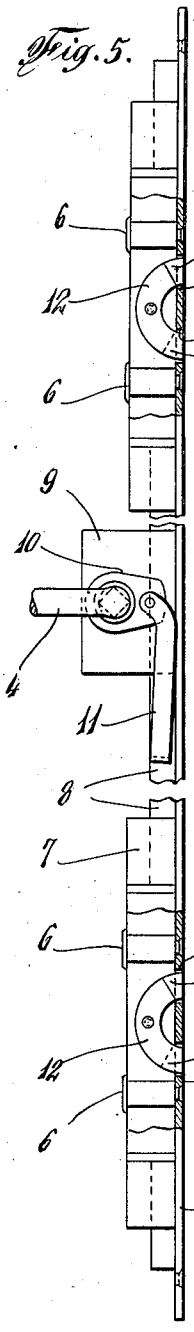


Fig. 6.

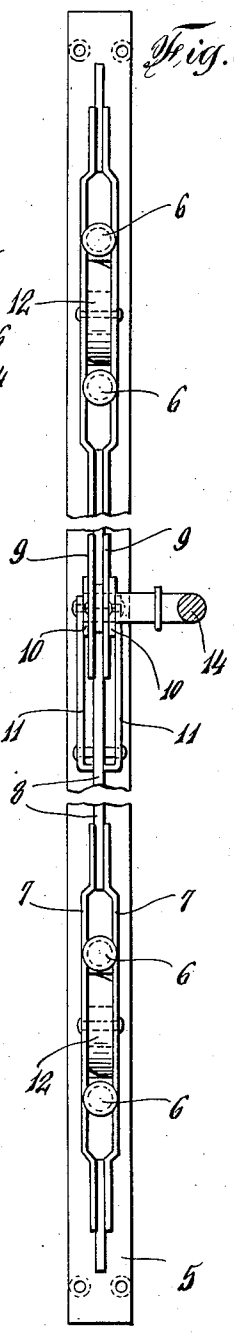


Fig. 7.

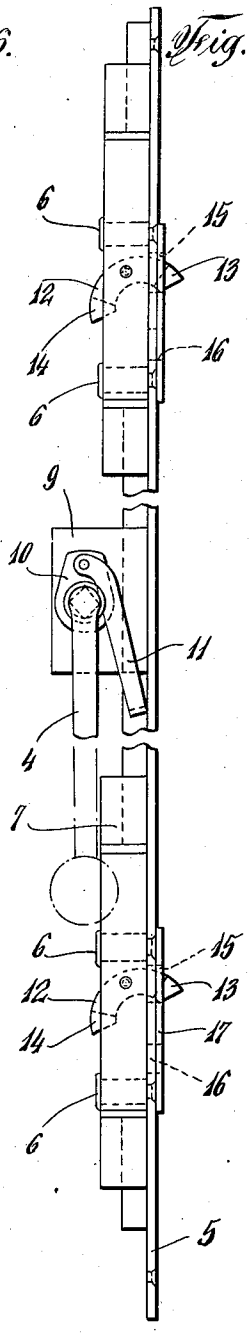
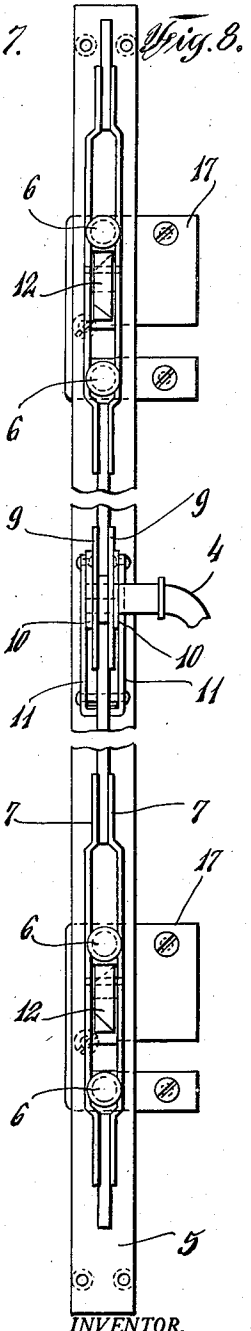


Fig. 8.



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Fig. 15.

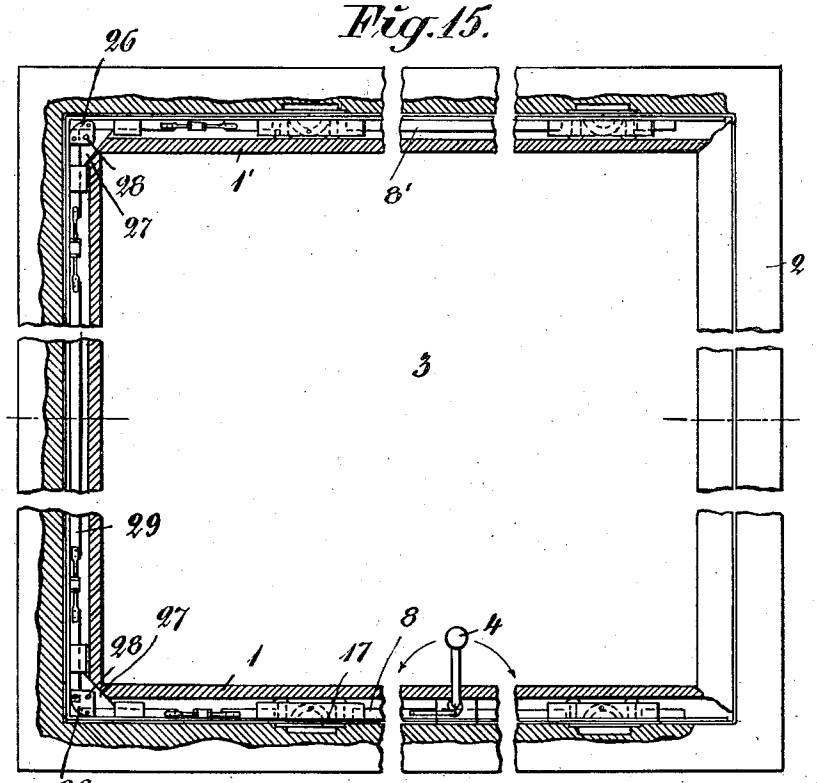
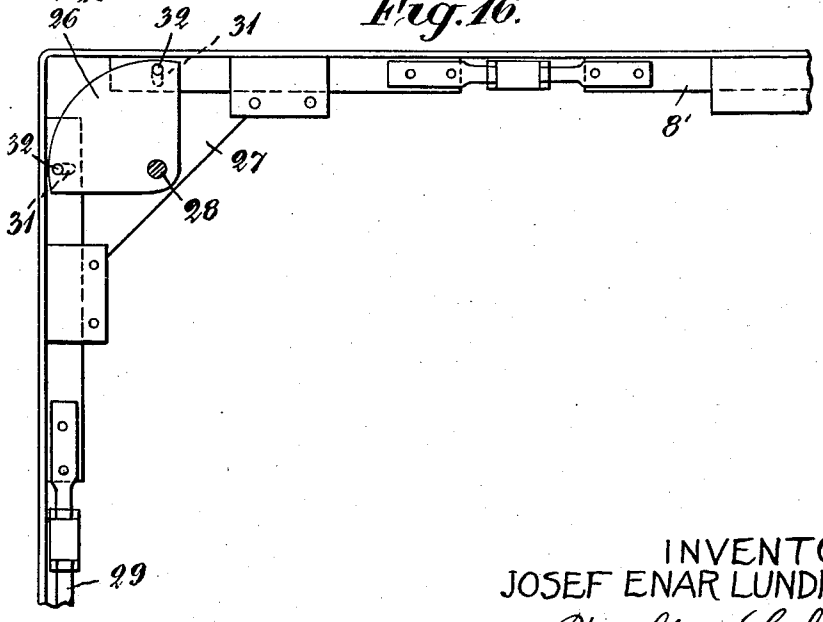


Fig. 16.



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Fig. 17.

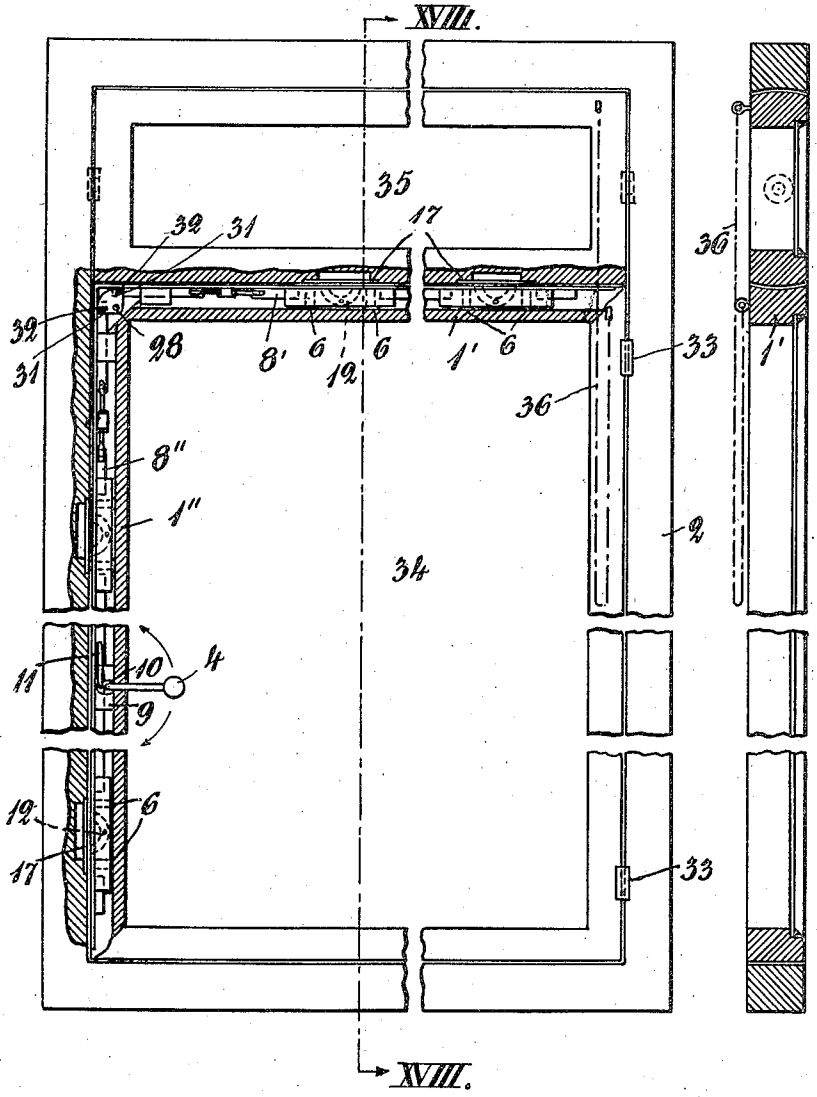


Fig. 18.

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Patented Feb. 13, 1945 2,369,584

UNITED STATES PATENT OFFICE

2,369,584

CLOSURE FASTENER DEVICE

Josef Enar Lundholm, Stockholm, Sweden

Application February 4, 1943, Serial No. 474,668
In Sweden April 28, 1941

7 Claims. (Cl. 292—48)

The present invention relates to a window fastener device, a so-called espagnolette window fastener device, which is adapted to be inserted into a window sash-frame, and has the advantage that, if the window sash-frame should catch in the window frame owing to warping or formation of ice, the window sash-frame is automatically pressed off from the window frame by means of the fastener device so far that the further opening can easily be accomplished by hand.

Three embodiments of the window fastener device according to the present invention are illustrated on the accompanying drawings, in which:

Fig. 1 shows the first embodiment of the window fastener device inserted into the lower horizontal structure member of the sash-frame of a window that may be turned about a horizontal axle;

Figs. 2–8 show in enlarged scale the window fastener device according to Fig. 1 in the two terminal positions (Figs. 2, 3, and 4; Figs. 7, 8) and in the middle position (Figs. 5 and 6) respectively, Figs. 2, 5, and 7 being front views, Figs. 3, 6, and 8 plan views, and Fig. 4 a transverse section along the line IV—IV of Fig. 2;

Figs. 9–11 show in enlarged scale a curved bolt in front view, plan view, and transverse section along the line XI—XI of Fig. 9, respectively;

Figs. 12–14 show in enlarged scale a strike plate inserted in the window frame in plan view and transverse section along the line XIII—XIII and XIV—XIV of Fig. 12, respectively;

Fig. 15 shows in front view the second embodiment of the window fastener device provided with curved bolts on both the horizontal structural members of the sash-frame of a window that may be turned about a horizontal axle;

Fig. 16 is a detail of Fig. 15 in front view and in enlarged scale;

Figs. 17 and 18 show in front view and transverse section along the line XVIII—XVIII of Fig. 17, respectively, the third embodiment of the window fastener device provided for two windows inserted in the same frame, whereby the lower window may be turned about hinges fixed at one side of the window frame, and the upper window about a horizontal axle.

According to Fig. 1, the window fastener device is inserted into the lower horizontal structural member 1 of a window sash-frame 3, which may be turned in the frame 2 about a horizontal axle (marked with dotted lines). The fastener device may be moved by means of a handle 4, which is directed vertically upwards in the middle position, i. e., in the position in which the fastener device is inoperative. A plate 5 serving to fix the fastener device at the structural member 1 by means of screws or the like and covering the recess in the structural member 1, in which the fastener device is placed, is provided with four pins 6 which guide a rod 8 which may be displaced with respect to the plate 5 in its longitudinal direction and embraces the guide pins 6 by means of fork-shaped parts 7. The handle 4 is fixed at a supporting member 9 embracing the rod 8. The handle 4 is connected with the rod 8 by means of two cranks 10 and two rods 11 so that, when the handle 4 is swung from one terminal position according to Figs. 2 and 3 into the middle position according to Figs. 5 and 6 and afterwards into the other terminal position according to Figs. 7 and 8, the rod 8 is displaced from the left to the right and, when the handle 4 is swung in the reverse direction, from the right to the left.

Between the two guiding pins 6 to the left and also between the two guiding pins 6 to the right a curved bolt 12 is arranged which may be turned about an axle fixed at the fork-shaped part 7. The right end of the curved bolt 12 is formed as a latching head for bolting the window 3 and the left end 14 of the curved bolt 12 as a camming head for pressing off the window sash-frame 3 from the frame 2. The exact form of the latching head 13 and of the camming head 14 is shown in Figs. 9–11, wherein Fig. 11, seen in the direction of the right arrows of Fig. 9, shows the side view of the latching head 13 and, seen in the direction of the left arrows of Fig. 9, the side view of the camming head.

An aperture 15 in the plate 5 is juxtaposed in registry with every latching head 13 and an aperture 16 in the plate 5 with every camming head 14. The latching heads 13 and the camming heads 14 cooperate with the apertures 15, 16 in such a way that, when the rod 8 is displaced to the right from the position according to Figs. 2 and 3, the camming heads 14 move back behind the apertures 16 and the latching heads 13 enter the apertures 15 (Figs. 5 and 6), and that, when the rod 8 is further displaced in the same direction, the latching heads 13 come forth from the apertures 15 and the camming heads 14 move back behind the apertures 16 (Figs. 7 and 8). Thus, the apertures 15 and 16 serve to guide the latching heads 13 and the camming heads 14 from the pressing-off-position (Figs. 2 and 3) in the middle position (Figs. 5 and 6) and afterwards in the bolting-position (Figs. 7 and 8) and reversely.

The latching heads 13 and the camming heads 14, when coming forth from the apertures 15 and 16 respectively enter recesses 20 and 21 respectively in the frame 2 through slits 18 and 19 respectively into strike plates 17 fixed at the frame 2 by means of screws. The slits 19 for the camming heads 14 are open in the direction of the front edge of the frame 2. The latching head 13 is so formed and the slit 18 is so arranged with respect to the latching head 13 that the latching head 13 when entering the slit 18 strikes with its edge 22 upon the squared-out edge 23 of the slit 18 and when being further moved into the recess 20 draws the window sash-frame 3 to the rear into a tight bolting position by means of its curved surface 24. Correspondingly, the camming head 14 is so formed and the slit 19 is so arranged with respect to the camming head 14 that the camming head 14 when entering the slit 19 strikes with its edge 22' upon the squared-out edge 25 of the slit 19 and when being further moved into the recess 21 presses off the window sash-frame 3 from the frame 2 by means of its curved surface 24' (Fig. 3).

In the same manner as above described the window fastener device according to the present invention may be formed with the latching and camming heads are arranged not only at one horizontal structural member, but for instance according to Figs. 15 and 16 at both horizontal structural members 1, 1' of the window sash-frame 3.

In this case it is only necessary to connect the lower rod 8 with the upper rod 8' by means of a rod 29, which may be moved in a recess of the window sash-frame, and of two corner plates 26 which may be turned about axles 28 fixed at plates 27 inserted in recesses of the window sash-frame 3. The rods 8, 8' and 29 are suitably provided with slots 31 arranged perpendicularly with respect to the longitudinal direction of these rods. Pivots 32 fixed on the corner plates 26 pass through the slots 31. In this way both rods 8, 8' may be moved by one handle 4.

According to Figs. 17 and 18 the window fastener device is inserted into the upper horizontal structural member 1' and the vertical structural member 1'' of a window sash-frame 34 fixed at the frame 2 by means of hinges 33. In this case the fastener device consists of two rods 8' and 8'' respectively connected with one another by means of a corner plate 26 which may be turned about an axle 28. The rods 8' and 8'' are provided with slots 31 arranged perpendicularly with respect to the longitudinal direction of the rods 8' and 8'', whereby pivots 32 fixed on the corner plate 26 pass through the slots 31. Both the curved members 12 of the rod 8' and the curved members 12 of the rod 8'' may be turned by means of one handle 4. The window fastener device according to Figs. 17 and 18 is employed for bolting and pressing off from the frame 2 not only the window sash-frame 34, but also a window sash-frame 35, which is arranged above the widow sash-frame 34 and may be turned about a horizontal axle. The window sash-frame 35 when being pressed off from the frame 2 may be further opened by means of a line mechanism 36 or the like.

Having now particularly described the nature of my invention and the manner of its operation what I claim is:

1. A window fastener device, comprising a rod movably supported on a structural member of a window sash-frame and adapted to be displaced in its longitudinal direction, curved bolts adapted to be turned above axles fixed on said rod, one end of each of said curved bolts being formed as a latching head and the other end as a camming head, a plate adapted to guide said rod and to movably support said fastener device on said window sash-frame, apertures in said plate, recesses in the window-frame, one of said apertures and one of said recesses being in registry with each of said latching and camming heads, said latching heads and said camming heads being so formed and cooperating with said apertures in such a way that, when said rod is displaced from a middle position, to one terminal position, said bolts are thereby turned in one direction to project said latching heads through said apertures and bolt said window sash-frame by entering said recesses, and when said rod is displaced from said middle position to the other terminal position, said bolts are thereby reversed to project camming heads through said apertures and press off said window-sash-frame from said window frame by entering said recesses.

2. A window fastener device, comprising a rod movably mounted on a structural member of a window sash-frame and adapted to be displaced in its longitudinal direction, curved bolts adapted to be turned about axles fixed on said rod, one end of each of said curved bolts being formed as a latching head and the other end as a camming head, a plate adapted to guide said rod and to movably mount said fastener device at said window sash-frame, a strike plate fixed on the window frame, apertures in said plate, slits in said strike plate adapted to register with said apertures, recesses in said window frame respectively registered with said latching heads and said camming heads being so formed and cooperating with said apertures in such a way that, when said rod is displaced from a middle position to one terminal position, said bolts are thereby turned in one direction to project said latching heads through said apertures and press off said window-sash frame from said window frame by entering said slits and recesses and cooperating with the rear edge of said slits.

3. A window fastener device according to claim 2, the slits with which said camming heads cooperate being open in the direction of the front edge of said window frame.

4. A window fastener device, comprising two rods, guide plates mounting said rods on a structural member of a window sash-frame for longitudinal displacement, a handle bar movably mounted on said member, means connecting said handle bar and said rods for simultaneous longitudinal displacement of said rods upon movement of said bar, curved bolts, transverse axles rotatably mounting said bolts on said rods, respectively, one end of each of said bolts comprising a latching head and the other end thereof comprising a camming head, said guide plates having apertures therein, a window frame having recesses registering with said apertures, said bolts, axles, and apertures being formed and arranged with respect to one another so that, when said rods are displaced from an intermediate position to one terminal position, said curved bolts engage against the guide plate at one end of said aperture and thereby are respectively turned in one direction to project said latching heads through said apertures and into said recesses to latch said sash-frame to the window frame and whereby, when said rods are displaced from said

intermediate position to the opposite terminal position, to engage said curved bolts against the guide plates at the other ends of said apertures to respectively turn said bolts in the other direction whereby to project said camming heads from said apertures so as to press off said sash-frame from said window frame.

5. In combination claimed in claim 4, strike plates on said window frame, said strike plates having slits therein registering with said apertures, said camming heads having the cam surfaces thereon arranged to cooperate with the edge of said slits disposed towards the rear with respect to the direction of opening of said sash member.

6. In combination claimed in claim 4, strike plates on said window frame, said strike plates having slits therein registering with said apertures, said camming heads having the cam surfaces thereon arranged to cooperate with the edge of said slits disposed towards the rear with respect to the direction of opening of said sash member, said slits being open towards the front with respect to the direction of opening said sash-frame.

7. A fastener device for two windows mounted in the same frame, one of said windows being swingable about a vertical axis on hinges affixed to one of two vertical structural members of said frame and the other window being openable by swinging about a horizontal axis, said one window having a vertical sash member normally adjacent the other vertical structural member and a horizontal sash member opposite a normally adjacent sash member of the other window, a pair of rods, a pair of guide plates slidably mounting said rods on said vertical and horizontal sash members for longitudinal displacement, a handle bar movably mounted on said window, means connecting said handle bar and said rods for simultaneous longitudinal displacement of said rods upon movement of said bar, curved bolts, transverse axles rotatably mounting said bolts on said rods, respectively, one end of each of said bolts comprising a latching head and the other end thereof comprising a camming head, said guide plates having apertures therein, said other vertical member and the adjacent sash member of the other window having recesses therein for respectively registering with said apertures, said bolts, axles, and apertures being formed and arranged with respect to one another so that, when said rods are displaced from an intermediate position to one terminal position, said curved bolts engage against the guide plates at one end of said apertures and thereby are respectively turned in one direction to project said latching heads through said apertures into said recesses to latch the sash-frame of the first window to said window frame and to the adjacent sash member of the other window and whereby, when said rods are displaced from said intermediate points to the opposite terminal position, to engage said bolts against the guide plates at the other ends of said apertures to respectively turn said bolts in the other direction whereby to protect said camming heads from said apertures so as to press off the first-mentioned sash-frame from said window frame and to swing the other window.

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