March 18, 1930. F. E. DOMSCHEIT 1,750,747

WINDOW

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Fig. 1.

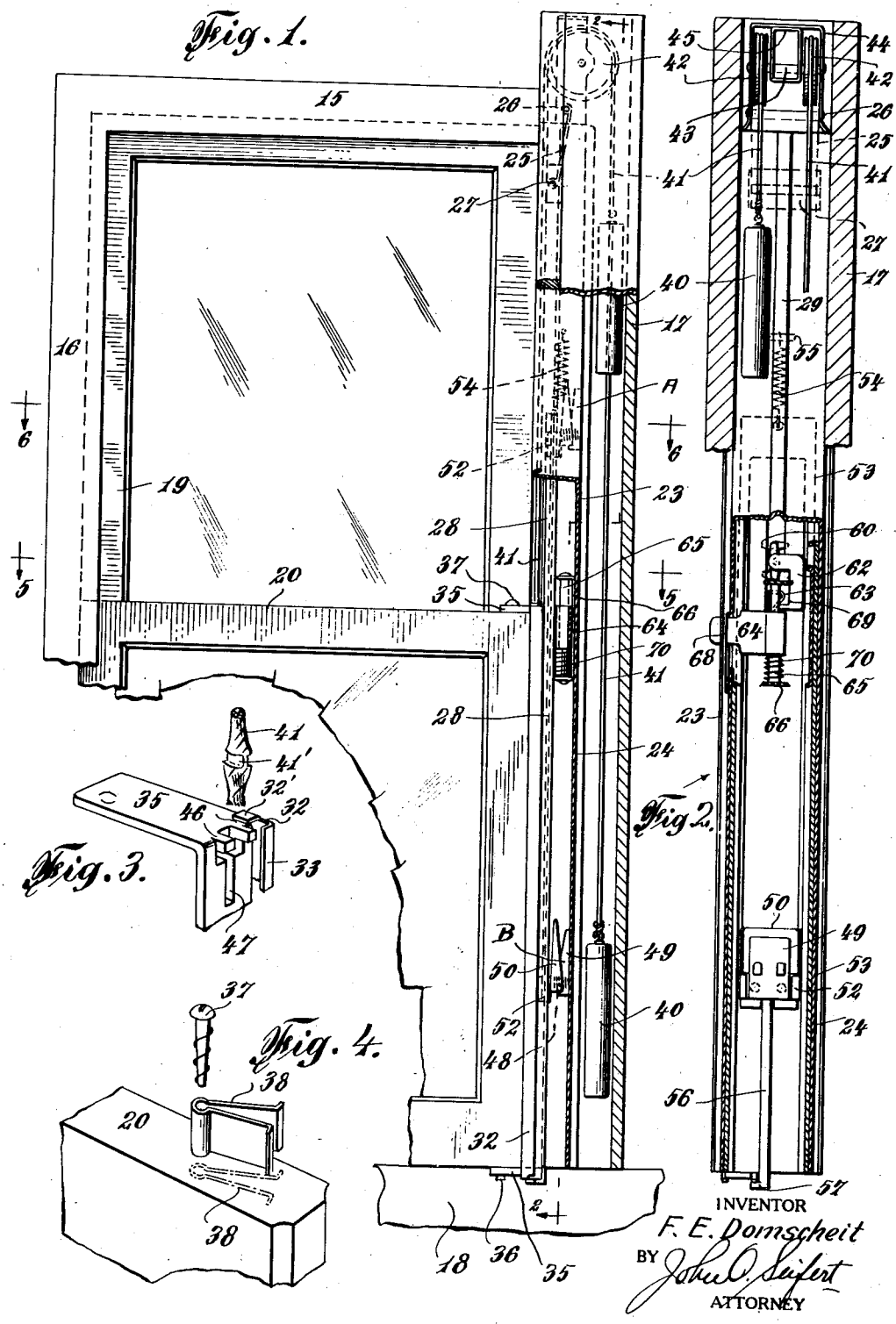


Fig. 2.

Fig. 3.

Fig. 4.

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Fig. 5.

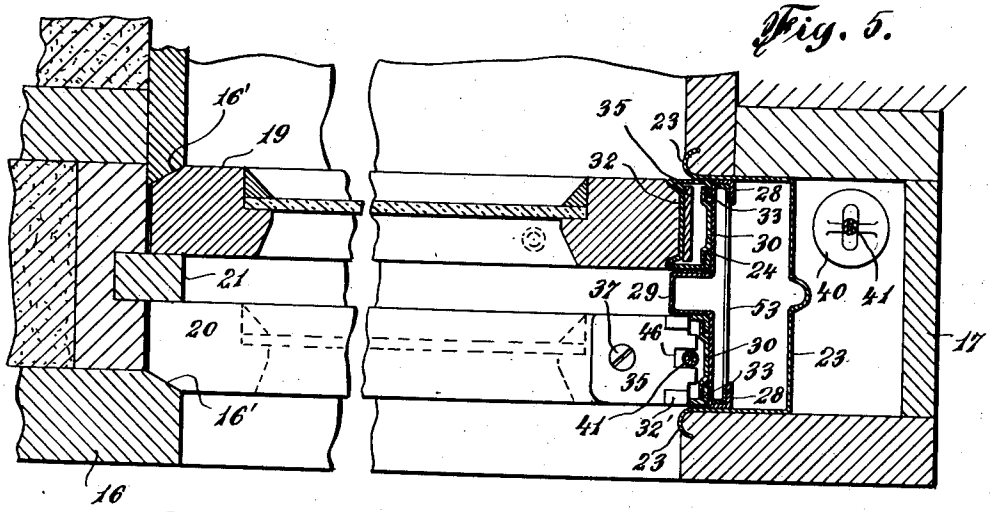


Fig. 6.

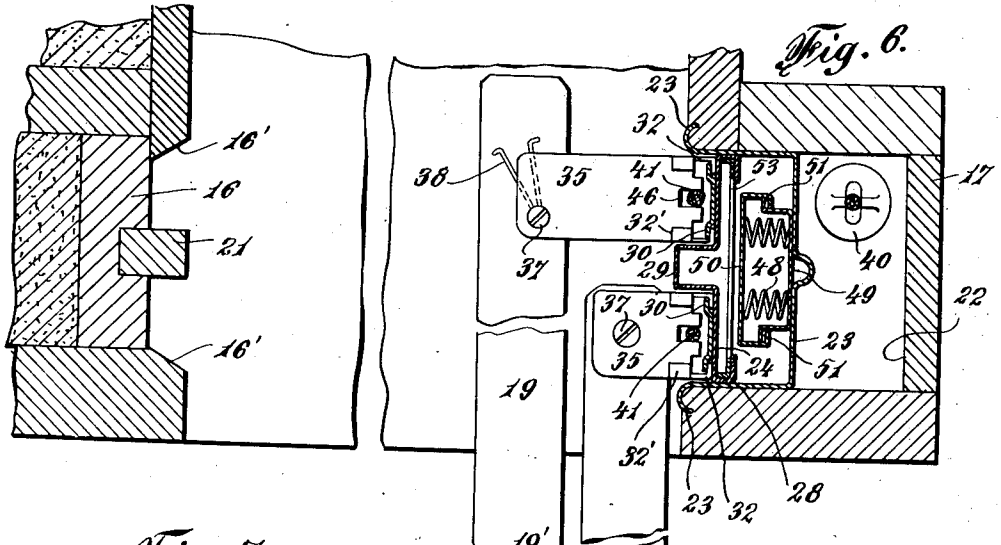


Fig. 7.

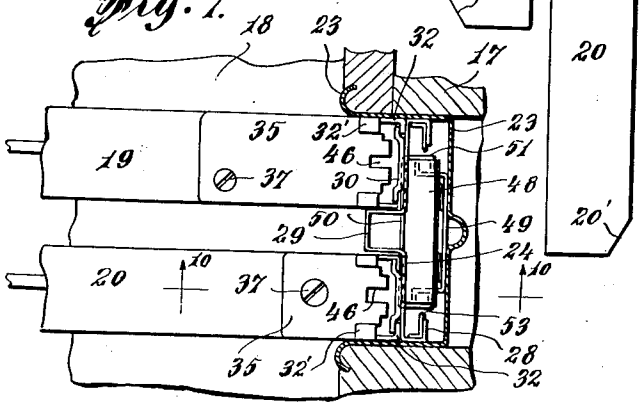


Fig. 8.

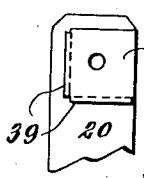
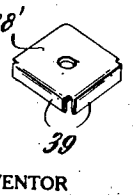


Fig. 9.



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Fig. 10.

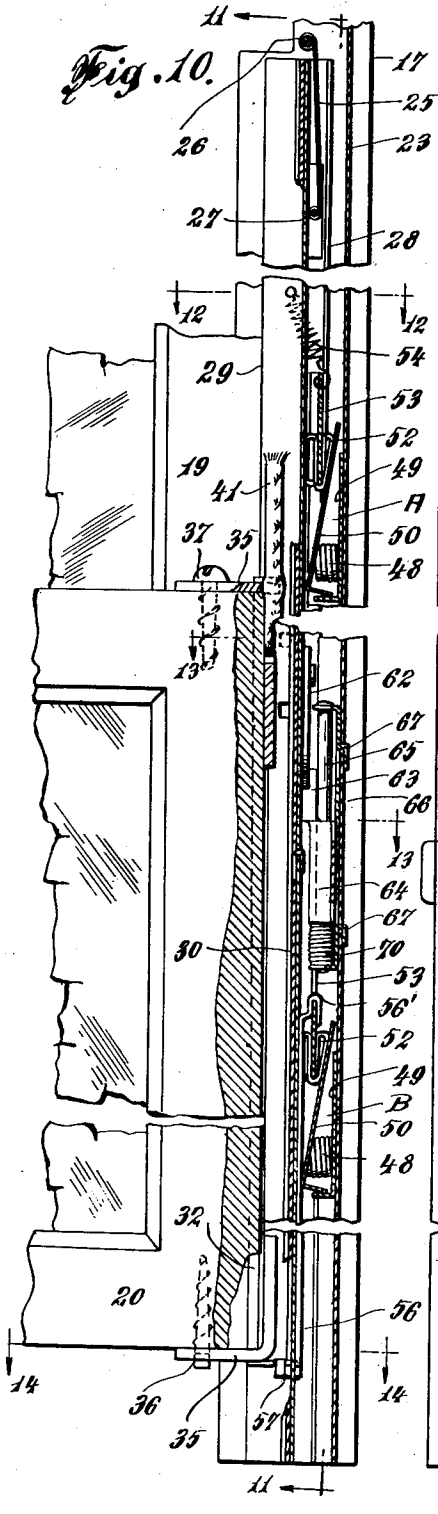


Fig. 11.

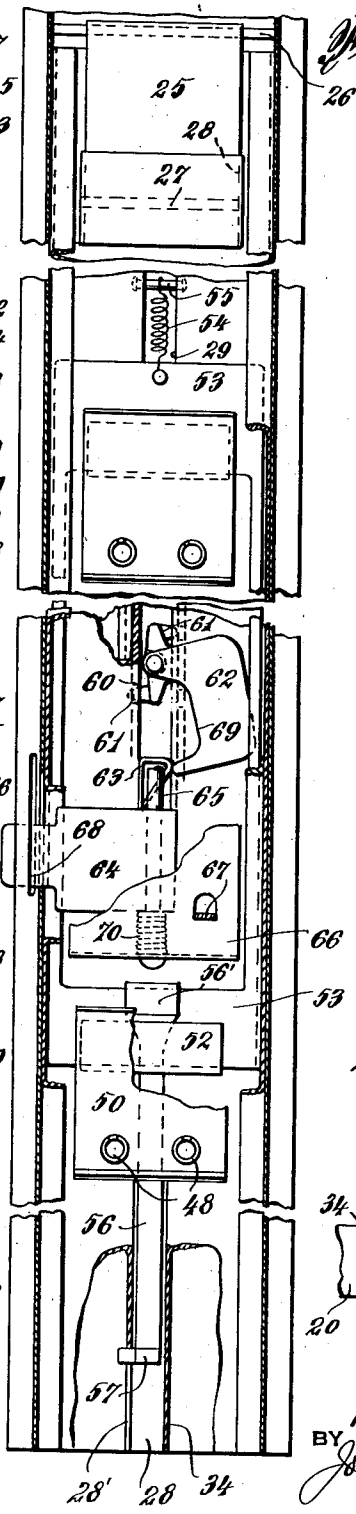


Fig. 12.

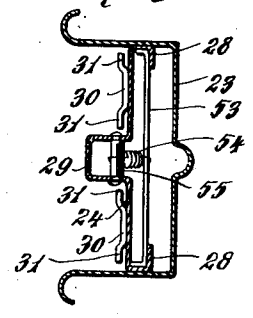


Fig. 13.

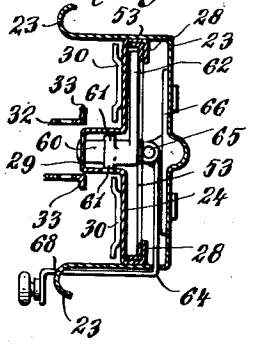
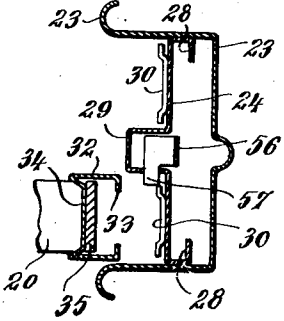


Fig. 14.



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UNITED STATES PATENT OFFICE

FREDERICK E. DOMSCHEIT, OF BROOKLYN, NEW YORK

WINDOW

Application filed July 21, 1928. Serial No. 294,330.

This invention relates to windows embodying a frame arranged for the slidable mounting of a pair of sashes therein to have movement one relative to the other, and wherein one side member of the window frame in which the sashes are slidably carried is adapted to firmly impinge upon the face of the one side member of the sashes and to be bodily shifted with the sashes toward and be firmly impinged against the other side member of the frame to provide an air tight fit between the window frame and sashes and thus obviating the necessity of applying weather strip or the like to the window frame, and which frame member is adapted to be released to permit of the easy adjustment of the sashes in the frame, and it is the object of the invention to provide an improved constructed and arranged window of this character which is simple in structure, efficient in use, and easy to operate.

It is another object of the invention to provide improved means for mounting the sashes in the shiftable side member of the window frame and provide means to exert a force on the shiftable member to retain the sashes firmly in the frame though readily and easily slidable therein and arranged to be automatically actuated when one sash member is moved to closing position to clamp the sashes in the frame against movement and to mount the sashes to have adjustment on vertical axes so that they may extend transversely and inwardly of the opening of the window to facilitate cleaning of the window.

A further object of the invention relates to improved means for automatically locking the sashes against movement in a window frame either when adjusted to closed position or adjusted to various predetermined open positions, and to means for releasing said locking means to permit of adjustment of the sashes in the frame.

Another object of the invention relates to improved means in windows of this character for securing sash weight carrying cords or chains to the sashes.

Other objects and advantages will hereinafter appear.

In the drawings accompanying and forming a part of this application Figure 1 is a front elevation, partly broken away and partly in section, of a window frame and a pair of sashes mounted therein, and showing an embodiment of my invention applied thereto with the shiftable frame member in position to clamp the sashes against movement in the frame.

Figure 2 is a longitudinal sectional view taken on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a perspective view of the means for connecting the sash weight cord to the sash.

Figure 4 is a perspective view of the corner portion of a sash and showing means disassembled therefrom for pivotally connecting an auxiliary sash member thereto.

Figure 5 is a cross sectional view, on an enlarged scale, taken substantially on the line 5—5 of Figure 1 and looking in the direction of the arrows.

Figure 6 is a cross sectional view, on an enlarged scale, taken substantially on the line 6—6 of the frame shown in Figure 1 looking in the direction of the arrows, with the shiftable frame member and other parts in position to release the same from the sashes, and showing the sashes in full lines and adjusted on their pivotal supports on the shiftable member.

Figure 7 is a view similar and of the parts shown in the right of Figure 6 on a reduced scale, but showing the sashes adjusted for sliding adjustment in the frame.

Figure 8 is a detail view looking at the top of a corner of a sash and showing a modification of the means shown in Figure 4 for the pivotal supporting of the sashes.

Figure 9 is a perspective view of the sash reinforcing member shown in Figure 8 for the pivot support of the sashes.

Figure 10 is a front elevation in longitudinal section to show the mounting of the sashes in the shiftable frame member and the means for actuating said member to clamp the sash in the frame and showing the same in sash releasing position.

Figure 11 is a longitudinal sectional view taken substantially on the line 11—11 of

Figure 10 looking in the direction of the arrows to show the actuating means for the shiftable frame member, and means for releasably locking the sashes in adjusted position; and

Figures 12, 13 and 14 are cross sectional views taken substantially on the lines 12—12, 13—13 and 14—14 of Figure 10, respectively, and looking in the direction of the arrows, Figures 13 and 14 showing a portion of the sash mounting in disassembled relation to the shiftable frame member.

In carrying out the embodiment of the invention illustrated in the drawings there is provided a frame comprising a rigid top and side members 15, 16 and 17 and a rigid bottom sill 18 with a pair of light carrying sashes 19, 20, the side frame member 16 being arranged with a longitudinal parting strip 21 to provide a pair of runways for the slidable engagement of one side member of the sashes, the outer walls of said runways being chamfered, as shown at 16′, and an edge portion of the sashes are correspondingly chamfered, as at 19′ and 20′ to provide a close fit between the sashes and runways.

The side frame member 17 is arranged with a longitudinal channel 22 opening to the other side frame member 16 and has mounted therein a metallic casing 23 of channel shape in cross section, said casing being removably mounted in position by recessing the laterally flanged and curved extremities of the legs of the casing in the material of the frame member, as at 23′. The case is of a depth of about one-half the depth of the frame channel 22 and of a length slightly less than the frame member 17 extending from the sill 18 to a point within the top of said frame member, which member extends somewhat above the top member 15, as clearly shown in Figure 1. A sash support in the form of a plate 24 of a length substantially the same as the casing is supported by a link 25 in the casing, said link being in the form of a plate pivotally mounted at one end on a rod 26 extending transversely of and fixed at opposite ends in the legs of the casing, and pivotally mounted at the other end on a rod 27 extending transversely of the sash supporting plate and fixed at the ends adjacent the top of said plate in laterally flanged portions 28 constituting slideways for a purpose to be hereinafter described. By the supporting of said sash supporting plate by the link 25 the plate is adapted to have floating movement in a direction into and out of the casing. The sashes are mounted on the supporting plate 24 at the sides opposite to that at which they slidably engage in the runways in the frame member 16 to have sliding movement one relative to the other and have pivotal movement on vertical axes at said end of the sashes. For this purpose the sash supporting plate 24 is offset laterally intermediate the ends in a direction opposite to the flanges 28 to substantially channel shape in cross section, as at 29, to form a parting strip for the sashes and cooperate with the legs of the casing 23 to form a pair of sash runways. To slidably mount and retain the sash upon the supporting plate 24 slideways 30 are fixed upon the face of said plate in the runways, said slideways comprising plates secured to the supporting plate intermediate the sides with the lateral marginal portions flanged, as at 31, and upon which flange portions auxiliary sash members 32 of channel shape in cross section are mounted, said auxiliary sash members having the marginal portions of the legs flanged inwadly, as at 33, for engagement over and in back of the flanged marginal portions 31 of the slideway plates 30. (Figures 1, 5, 6 and 7.) The connecting portion of the auxilliary sash members is offset inwardly for the engagament of the outer face of the side members of the sashes 19, 20, as shown at 34 in Figure 14, to hold the light carrying and auxilliary sashes against lateral displacement one relative to the other, and the corners of the light carrying sashes are chamfered to fit correspondingly formed chamfered portions in the inwardly offset connecting portion of the auxilliary sash members to make a tight fit between the two. The light carrying sashes are mounted in the auxilliary sash members 32 to have sliding movement with said auxilliary sash members upon the slideways 30 and movement on vertical axes by angle members 35, one angle portion of which members is engaged in the end of and connected to the connecting portion of the channel of the auxiliary sash members, and the opposite angle portion of one angle member engaged below the light carrying sashes and having a perforation therein for the engagement of a pivot secured in the light carrying sashes, as at 36 in Figure 10. The opposite angle portion of the other angles are engaged over the top of the light carrying sashes and pivotally connected thereto by a pivot in the form of a headed screw 37 engaged in a perforation in the angle and threaded into the top member of the sashes. (Figures 5 to 10, inclusive.) The angle members for the upper sash are of greater length than the angle members for the lower sash, and the pivotal connection of the sash therewith is arranged a greater distance inward from the side of the sash to permit of the simultaneous adjustment or swinging of the both sashes in the auxiliary sash members, as shown in Figure 6, wherein the light carrying sashes are shown adjusted to extend in a direction at right angles to the opening in the window frame. To adjust the light carrying sashes to such positions a lateral thrust is exerted on the sashes in a direction to move

the sash supporting plate 24 into the casing 23 a distance to permit the ends of the sashes opposite to that at which they are pivotally supported in the auxiliary sash members to clear the runways in the frame member 16.

To prevent the sash supporting pivots from splitting the material of the sashes when made of wood due to the weight of the sashes or otherwise reinforcing members 38 are arranged in the sashes. As shown in Figures 4 and 6 these reinforcing members comprise metal strips folded upon themselves with the bend of the strip of circular form and the opposite ends diverging outwardly therefrom and the extremities flared laterally. These members are driven into the sash with the curved bent portion positioned for the engagement of the pivot screws therein, as shown in full and dotted lines in Figure 6 and in dash lines in Figure 4. A modification of said reinforcing means is shown in Figures 8 and 9 as comprising rectangular sheet metal plates 38′, having marginal portions flanged laterally, as at 39, for embedding in the material of the sashes, and having a perforation for the engagement of the pivot screw.

To counterbalance the sashes 19, 20 counterweights 40 are carried by chains or cords 41 secured at one end to the weights, which weights are arranged in the space between the bottom of the channel in the frame member 17 and the casing 23, and passed over pulleys 42 rotatably mounted on a pintle 43 fixed at the opposite ends in a hood 44 fixed to the end of the casing 23, and extended through a spacer 45 for the rollers fixed in the hood. The opposite ends of the sash weight cords or chains are connected with the angle members 35 for connecting the light carrying sashes with the auxiliary sash members. For this purpose portions of the material of the angle members 35 engaging in the auxiliary sash members are stamped therefrom at the bend of the angle members and extended laterally to form a laterally extending bifurcation at the angle bend, as shown at 46 in Figure 3, and the angle portion from which said bifurcation portions are stamped has a portion stamped therefrom to form a slot 47 in line with the space between the bifurcation legs. To secure a sash weight cord thereto it is pinched together at a point within the end as by a pair of pliers and as shown at 41′ in Figure 3, and such pinched together portion of the cord is engaged between the bifurcation legs with the extremity of the cord engaged in the slot 47. To retain the light carrying and auxiliary sashes against longitudinal displacement a portion at the ends of the auxiliary sash members is flanged over the sash supporting angles 35, as shown at 32′ in Figure 3.

To firmly impinge the sashes 19, 20 against the frame member 16 and the sash supporting plate 24 against the sashes to provide an air tight joint and to prevent rattling of the sashes, the sash supporting plate is in the nature of a clamping bar, and means are provided to yieldingly urge the plate in a direction outward from the casing 23 into engagement with the sashes and shift the sashes bodily therewith in a direction toward the frame member 16 but with an easy enough fit to permit of ready raising and lowering of the sashes. For this purpose yielding abutments or cushions are mounted on the connecting portion of and within the casing 23 in interposed relation to the casing and plate 24, said abutments being shown as two in number and indicated by A and B, (Figures 1, 6, 7, 10 and 11,) although a greater number may be used. Each of said abutments comprises a pair of coiled springs 48 seated at one end in a channel member 49 having the legs converging from an intermediate portion to one end (Figure 1) and at the commencement of said converging portion flanged laterally (Figure 6), and the opposite ends of the springs seated in a channel member 50 of a width so that the legs thereof may be engaged over the flanges of the channel member 49 and the legs at one end flanged inwardly to engage over the flanges of said channel member 49 whereby the channel members are adapted to have an interlocking sliding connection, as at 51 in Figure 6, the end portions of the legs of the channel member 50 also converging toward the connecting portion and one end. The abutments are mounted upon the casing by securing the channel member 49 thereon. In the normal position of the channel supporting plate 24 the abutments assume the position shown in Figure 10.

To shift the sash supporting plate 24 and sashes carried thereby toward the frame member 16 and firmly clamp the sashes in the frame when adjusted to closed position yielding saddles are provided adapted to be interposed between the abutments and the sash supporting plate. These saddles comprise strips of yielding material folded upon themselves, as shown at 52 in Figure 10, and are carried by an actuator slide 53 slidably mounted in the slideways 28 of the sash supporting plate, the slide being normally urged to position with the saddles as shown in Figure 10, by a spring 54 attached at one end to a pin 55 extending transversely of and fixed at the ends in the walls of the plate offset 29, and the spring attached at the opposite end to the upper end of the slide. This slide is actuated by a light carrying sash when the sashes are moved to closed position to interpose the saddles between the said supporting plate and abutments, in the present instance by the sash 20 by the bottom of said sash engaging a slide actuator 56 as the sash approaches its closed position, said slide ac-

tuator comprising a bar 56 slidably engaged in the plate offset 29 and fixed at one end, as at 56', (Figure 11) to the slide 53 and the opposite end 57 offset laterally and extended through a slot 28' in the wall of the plate offset 29 to position below the bottom of and for engagement by the auxiliary sash member 32 to which the sash 20 is connected. When the sash 20 is moved to closing position the auxiliary sash member 32 will engage the laterally offset portion 56' of the slide actuator 56 and move the same and the slide against the tension of the spring 54 and interpose the saddles 52 between the abutments A and B and sash supporting plate 24 urging the latter on its link support 25 outward from the casing and therewith the sashes 19, 20 bodily toward the frame member 16 and firmly though yieldingly clamping and retaining the sashes in such position. When the sash 20 is raised the sash supporting plate will be released during the initial movement of the sash by the sash moving out of engagement with the offset 56' of the slide actuator 56, the slide being moved upward by its spring 54 and thereby moving the saddles 52 from between the abutments and sash supporting plate.

Means are provided to automatically lock the sashes 19, 20 in closed position or in various open positions, said means comprising a latch 60 pivotally mounted intermediate the ends on a stud fixed in the plate offset 29, as shown in Figures 11 and 13, said latch having pallets 61 extending laterally and oppositely from the opposite ends and adapted to be projected through perforations in the walls of the plate offset 29 and into recesses or sockets in the sashes, as clearly shown in Figures 11 and 13, this movement of the latch being effected by gravity and the aid of a counterweight 62 in the form of a rectangular plate fixed to the latch pivot at one corner. To release the latch to permit moving of the sashes to open position a manually operative latch actuator is provided comprising a cam member 63 formed on a plate 64 slidably mounted on a vertical stud 65 fixed in a bracket 66 in the form of a plate having the opposite ends flanged laterarally and in which flanges the stud is mounted, said bracket having tangs stamped therefrom and extended through openings in the connecting portion of the casing 23 and bent over the edge of said openings, as at 67, so that the bracket will lie contiguous to the casing. The actuator plate 64 has a reduced portion extended through a slot in the casing to serve as a finger grip, or it may have a knob attached thereto as shown at 68. The latch actuating cam carrying plate is normally urged upward with the cam 63 to engage a cut out portion 69 in the edge of the plate by a spring 70 coiled about the stud 65 and confined between the bottom flange of the supporting bracket 66 and the cam carrying plate 64, in which position the cam will clear the projection at the lower corner of the plate 62 formed by the cut out in the edge thereof. In order to release the latch the finger grip of the cam plate is grasped and said plate moved downward against the tension of the spring 70 causing the cam to engage the projection of the latch plate 62 moving the same laterally, as shown in Figure 11, and the latch pallets out of engagement with the sash recesses or sockets.

By the construction and arrangement of window as described it will be obvious that the sashes may be readily removed for replacing a light or otherwise by removing the pivot screws 37 and lifting the sashes to disengage the pivots from the perforations in the lower sash supporting angles 35, and that this may be done without first removing a sash retaining strip as is usual. Furthermore, by the arrangement of the mounting of the casing or housing 23 the sash supporting plate 24 may be readily removed and another substituted therefor by withdrawing the same from the casing and removing one of the support pintles from the plate supporting link 25, and that the entire casing 23 may be readily removed from the window frame without marring the frame and another substituted therefor.

While I have illustrated one embodiment of my invention it will be obvious that various modifications may be made in construction and arrangement of parts, and that portions of the invention may be used without others, and come within the scope of the invention.

Having thus described my invention I claim:

1. In a window frame, a casing of channel shape in cross section fixedly mounted in one side member of the frame and extending longitudinally thereof, a plate arranged for the slidable mounting of sash thereon mounted in said casing to extend longitudinally thereof and have movement in a direction into and out of the casing, yielding abutments mounted on the connecting portion of and within the casing, and means adapted to be positioned between said yielding abutments and the plate to move and urge the latter in a direction out of the casing.

2. In a window, a frame embodying a rigid side member arranged for the slidable engagement and guiding of sash, a casing of channel shape in cross section fixedly mounted in and extending longitudinally of the other side member, a plate extending longitudinally of and mounted in the casing to have movement in a direction into and out of the casing and arranged for the slidable mounting of sash thereon, yielding abutments mounted on and within the casing, and saddles adapted to be positioned between said

abutments and the sash carrying plate to urge the latter in a direction toward the opposite side member of the frame.

3. In a window frame embodying top and bottom members and a rigid side member arranged for the slidable engagement and guiding of sash and the other side member arranged with a longitudinal channel opening to the other side member, a plate mounted in said channel to extend longitudinally thereof and transversely between the legs of the channel and have movement in a direction into and out of the channel and arranged for the slidable mounting of sash thereon, yielding abutments mounted within the channel of said frame member, and means adapted for engagement between said abutments and plate to urge the plate outward from the channel, said latter means being operated by a window sash when it is moved to closed position.

4. In a window, a frame embodying a rigid side member arranged for the slidable engagement and guiding of sash, a casing of channel shape in cross section fixed in the other side member of the frame, a plate mounted in the casing to extend longitudinally thereof and have movement in a direction into and out of the casing, yielding abutments fixed on and within the casing, and a slide carried by the plate arranged with yielding saddles adapted to be interposed between the abutments and plate and cooperate therewith to move and urge the plate in a direction outward from the casing.

5. In a window frame embodying a rigid side member arranged with a pair of sash runways, a casing of channel shape in cross section mounted in the opposite side member of the frame, a plate mounted in and extending longitudinally of the casing and to have movement into and out of the casing, said plate having an offset intermediate the sides to arrange said plate to co-operate with the casing to form a pair of sash runways and the lateral marginal portions of the plate arranged with slideways, yielding abutments mounted upon the connecting portion of and within the casing to urge the plate to sash clamping position, a slide mounted in the plate slideways, and saddles carried by said slide adapted to be positioned by the slide in interposed relation to the abutments and plate to move and urge said plate and sash engaging in the sash runways bodily in a direction toward the other side member of the frame.

6. In a window as claimed in claim 5, means to actuate the wedge carrying slide by a sash when it is moved to closing position to interpose the saddles between the abutments and plate to bodily shift the plate and the sash toward the rigid frame member.

7. In a window as claimed in claim 5, means to normally urge the slide in a direction to position the saddles out of engagement between the abutments and plate, and abutment means on the slide for engagement by the sash when moved to closing position to actuate the slide to position the saddles between the abutments and plate.

8. A window as claimed in claim 5, wherein the plate is arranged at opposite sides of the intermediate offset portion with slideways for the slidable carrying of the sash.

9. A window as claimed in claim 2, wherein the plate is mounted in the casing by a link pivotally supported at one end at the upper end of the casing and pivotally connected at the other end to the upper end of the plate whereby the plate is adapted to have floating movement in a direction into and out of the casing.

10. A window as claimed in claim 4, wherein the slide is urged in a direction to move the saddles out of engagement between the abutments and plate by a spring attached at one end of the plate and at the other end to the slide.

11. A window as claimed in claim 2, wherein the yielding abutments comprise springs seated at one end in a member of channel shape in cross section and having the legs tapered toward one end fixed to the connecting portion of the casing, and a member of channel shape in cross section in which the other ends of the springs are seated and the legs thereof having an interlocking sliding connection with the legs of the other channel member and the legs at one end tapered in a direction opposite to the legs of the other channel member.

12. In a window, a frame arranged with a channel in a side member thereof, a sash, a support mounted in the channel of the member of the frame to extend transversely thereof and have movement into and out of the channel, and means to mount the sash on said support to have longitudinal sliding movement thereon and movement on a vertical axis and participate in the movement of the support.

13. In a window, a frame having a rigid side member arranged with a pair of sash runways, a pair of sashes one to engage at one edge in each runway, a sash support mounted in the other side member of the frame to have movement in a direction toward and away from the opposite side member of the frame and arranged with a pair of sash runways, and means to mount the sashes in the runways of said support to have sliding movement longitudinal of the support and for adjustment of the sashes on vertical axes.

14. In a window as claimed in claim 13, means operative by a sash when moved to window closing position to actuate the support to bodily shift the support and sashes toward the rigid frame member and retain the same in said position.

15. A window as claimed in claim 13,

wherein the means to mount the sashes in the runways of the shiftable support to have sliding movement and adjustment on vertical axes, comprises auxiliary sash members in which the sashes are pivotally mounted at one end and said auxiliary sash members mounted in the runways of the shiftable support to slidably mount the sashes in said support.

16. In a window, a frame the side members of which are arranged with parting strips to provide a pair of runways in said members, a sash slidably mounted in each runway to have movement one relative to the other, a latch pivotally mounted in the parting strip and arranged with pallets at opposite sides of its pivot support and adapted to automatically engage recesses in the sashes when the latter are adjusted to window closing position and various predetermined open positions, and means to release said latch from the sashes.

17. In a window, a frame having a rigid side member arranged with a pair of sash runways, a pair of sashes, a shiftable support mounted in the other side member of the frame to have movement in a direction toward and away from the opposite side member of the frame and arranged with a pair of sash runways, an auxiliary sash member for each sash slidably mounted in the runways of the shiftable support, angle members fixed to the top and bottom of the auxiliary sash members, and pivots to pivotally support the sash in said angle members, and said angle members arranged at the bend with a bifurcation for the connection of a sash weight cord thereto.

Signed at the city of New York, in the county of New York and State of New York, this 13th day of July, 1928.

FREDERICK E. DOMSCHEIT.