June 29, 1948. A. HAMELIN 2,444,225

SLIDING AND SWINGING WINDOW CONSTRUCTION

Filed Jan. 17, 1946 3 Sheets-Sheet 1

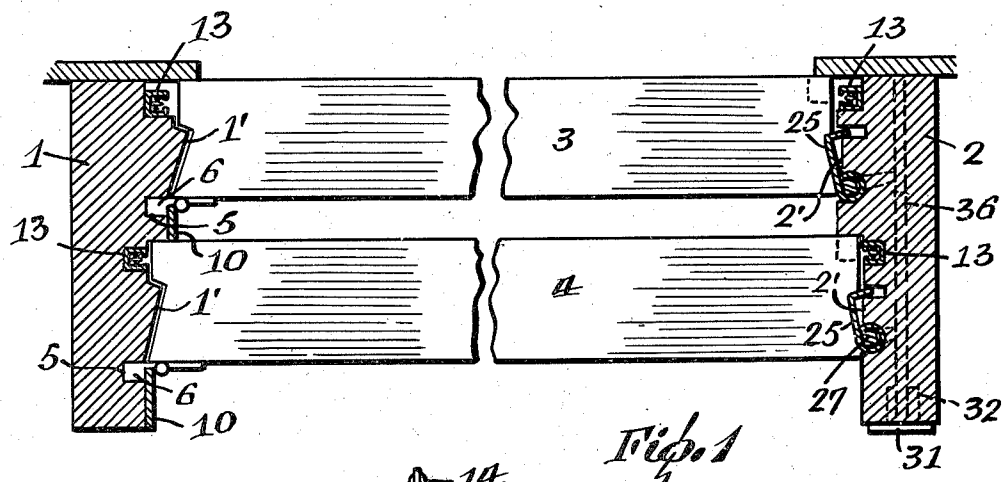


Fig. 1

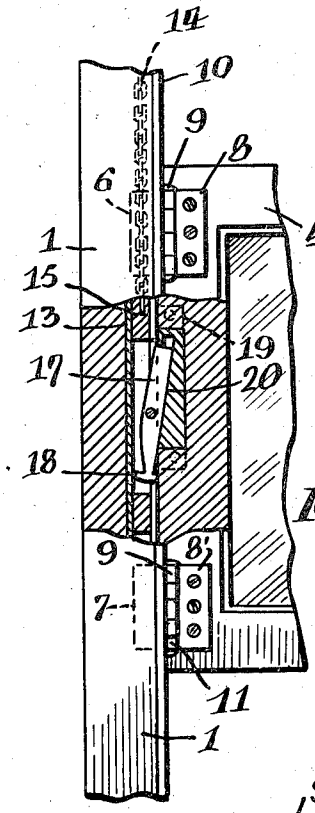


Fig. 2

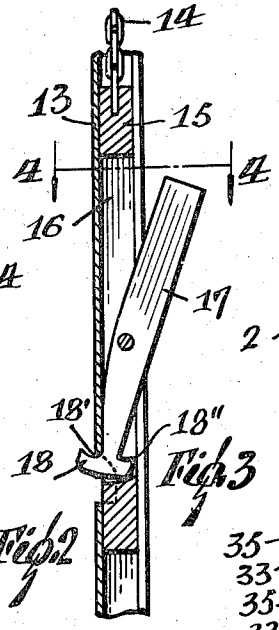


Fig. 3

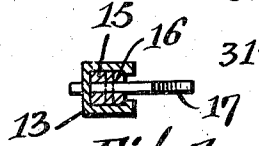


Fig. 4

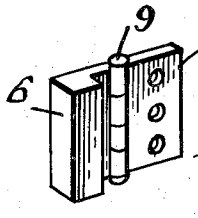


Fig. 5

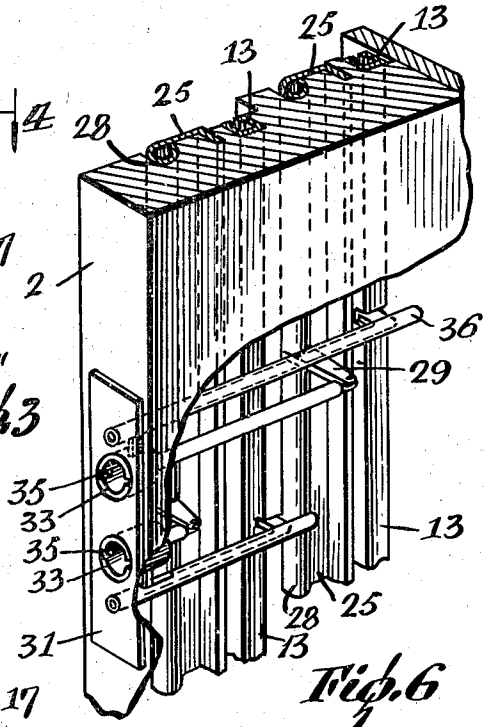


Fig. 6

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SLIDING AND SWINGING WINDOW CONSTRUCTION

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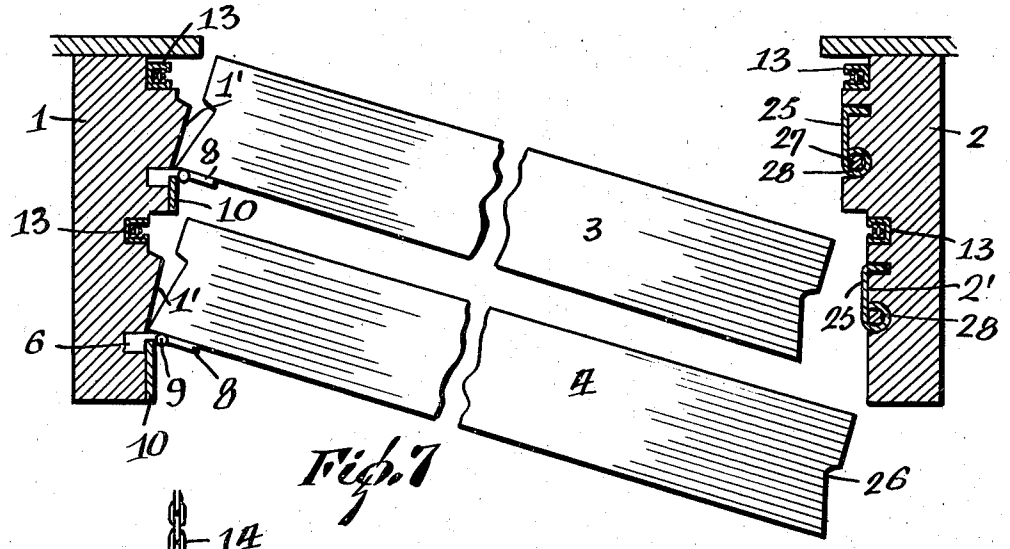


Fig. 7

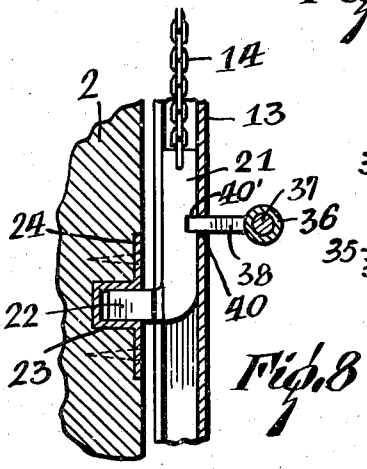


Fig. 8

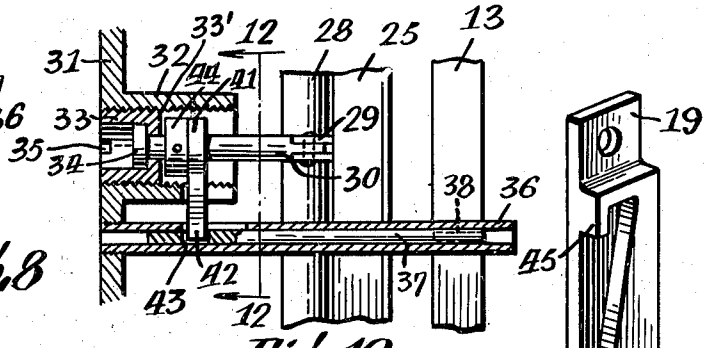


Fig. 10

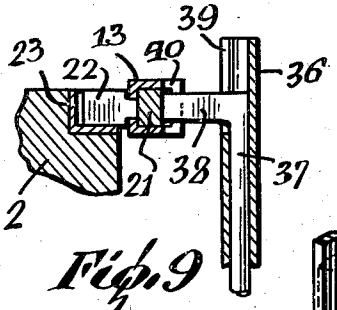


Fig. 9

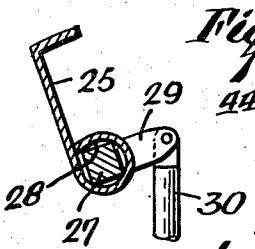


Fig. 11



Fig. 12

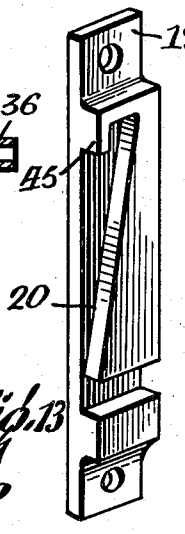


Fig. 13

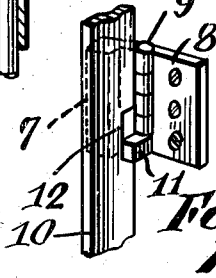


Fig. 14

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SLIDING AND SWINGING WINDOW CONSTRUCTION

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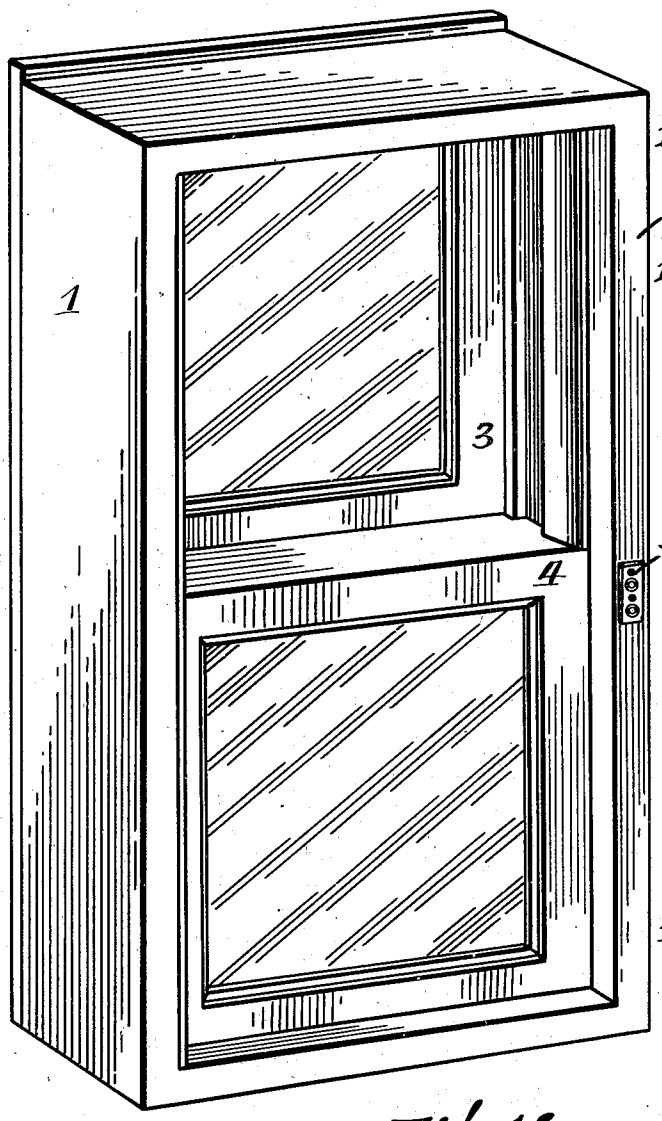


Fig. 15

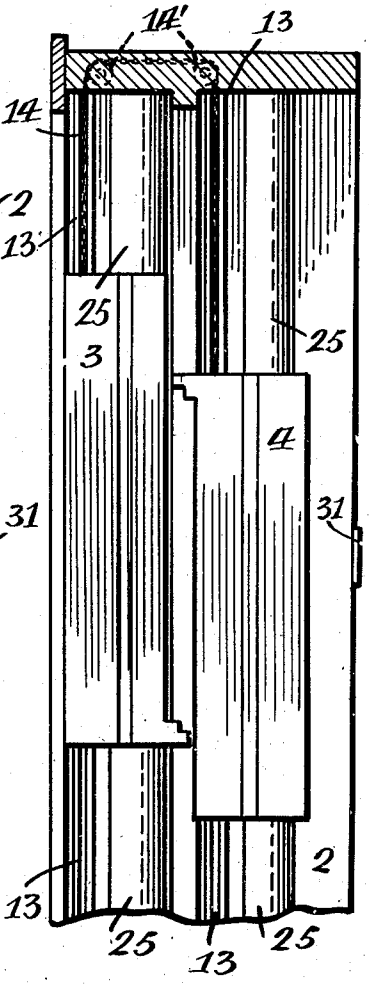


Fig. 16

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UNITED STATES PATENT OFFICE

2,444,225

SLIDING AND SWINGING WINDOW CONSTRUCTION

Arthur Hamelin, Pointe-aux-Trembles, Quebec, Canada

Application January 17, 1946, Serial No. 641,737

3 Claims. (Cl. 20—50)

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The present invention pertains to a novel window construction of the sliding sash type wherein the sashes are also hinged on vertical axes. The principal object of the invention is to permit easy cleaning of both sides of the sashes from the interior of the building by the simple expedient of swinging them on their hinges.

Another object of the invention is to provide a weather strip construction at the free vertical edges of the sashes for the further purpose of locking the sashes against swinging movement. Obviously, a means is provided for releasing the strips from the sashes when the latter are to be swung. Still another object of the invention is to provide means for automatically locking the sashes against the sliding movement when they are swung open.

In the accomplishment of these objects, the sashes are counterbalanced against each other at both vertical edges. At the hinged edge of each sash the counterbalancing system includes a locking member which is normally disengaged from the window frame to permit sliding of the sashes. This locking member is so constructed, however, that it automatically interlocks with the window frame when the sash is swung outward, with the result that the sash cannot then be further adjusted vertically. The locking member automatically disengages the frame member when the sash is closed on its hinge.

At the free or swinging edges of the sashes, the frame member carries vertically hinged weather-strips that interlock with the respectively adjacent sashes to hold them from swinging outward. A linkage is provided for withdrawing the weather-strips from the sashes when the latter are to be swung on their hinges. At this side also the sashes are counterbalanced against each other, and a locking means fixes the counterbalancing system to the frame member when the weather strips are withdrawn. This locking means includes a sliding finger adapted to lock each end of the counterbalanced chain to the frame member.

At an exposed portion on the indoor side of the window frame if an adjustable member for operating the linkage which withdraws the weather strips from their respective sashes. There is an individual adjusting member and linkage for each weather-strip. Each such linkage is connected to the corresponding sliding finger for locking the counterbalance system at this side of the frame. Thus, when the weather strips are withdrawn from the sashes, the counterbalance system is at this time locked to the frame member,

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with the result that the sashes are locked against vertical movement at this side of the frame, as well as at the other side, when the sashes are swung open on their hinges.

The invention is fully disclosed by way of example in the following description and in the accompanying drawings in which:

Figure 1 is a plan section of a window constructed according to the invention;

Figure 2 is a vertical elevation, partly in section, at one side of the window;

Figure 3 is an enlarged detail of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a detail perspective view of one of the hinges;

Figure 6 is a detail perspective view of one of the sash frames, partly in section and partly broken away;

Figure 7 is a plan section showing the sashes swung partly open;

Figure 8 is a detail vertical section;

Figure 9 is a horizontal section of Figure 8;

Figure 10 is a detail vertical section of the sash frame;

Figure 11 is a detail plan section;

Figure 12 is a section on the line 12—12 of Figure 10;

Figure 13 is a detail perspective view of one of the top members,

Figure 14 is a perspective view of another hinge,

Figure 15 is a perspective view of the window construction, and

Figure 16 is a vertical section of the window.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

In Figure 1 is shown a pair of window frame sides 1 and 2 for accommodating sliding sashes. The inner surfaces of the members 1 and 2 are formed with specially shaped ways 1' and 2' in which are slidably mounted a pair of sashes 3 and 4 in adjacent vertical planes.

The frame 1 is formed with a pair of vertical slots 5 at the window opening, and in each slot is slidably mounted a pair of hinge plates in the form of blocks 6 and 7 as shown in Figures 5 and 14 respectively. The blocks carry complementary hinge plates 8, 8' attached by conventional knuckle hinges 9, and two such plates are fastened to each of the sashes 3 and 4. Vertical strips 10 are attached to the inner surface of the frame 1 and extend into the blocks 6, 7 to permit sliding thereof in the slots. The hinge plates 8' are lowermost, and each such plate carries a lug 11

adapted to enter a notch 12 in the adjacent strip 10, when the sash is swung.

The sashes are counterbalanced against each other in both frame sides 1 and 2, and for this purpose each side frame member is provided with a pair of vertical channels 13 for receiving the connecting chains 14. There is one such chain in each side member, formed in two laps by passing over pulleys 14' well known in the art.

In the member 1, the ends of the chain 14 are attached to slides 15 mounted in the respective channels 13. Each slide 15 is formed with a substantial opening 16 in which is pivotally mounted a rocker arm 17 having a hook or finger 18 at its lower end engageable in an aperture 18' in the channel 13. The adjacent edges of the sashes carry brackets 19, each of which is formed with an angular recess 20 shaped to receive the inner edge of the adjacent rocker arm 17, as shown in Figure 2. By this means the sashes are suspended from the chain 14 in the side member 1.

In the opposite frame member 2, the ends of the chain 14 are attached to sliding blocks 21 mounted in the corresponding channels 13, as shown in Figures 8 and 9. The lower end of each member 21 is turned inwardly in the form of a finger 22 received in a notch 23 formed in the adjacent sash and preferably lined with a channel member 24. The operation of this device will subsequently be described.

The sashes 3 and 4 are normally locked against swinging by means of angular weather-strips 25 pivotally mounted in the frame 2 and engaged in notches 26 formed in the free vertical edges of the sashes, as shown in Figures 1 and 7. The pivotal mounting is obtained by means of square shafts 27 journalled vertically in the member 2 and having the strips rolled around them at 28, as illustrated more clearly in Figure 11.

In order to turn the strips 25 on their pivotal axes in order to disengage them from the sashes, each strip is formed with a laterally extending finger 29 hingedly attached to a rod 30 mounted horizontally as shown in Figure 10. A plate 31 mounted on the indoor surface of the member 2 has a pair of tapped bosses 32 extending therefrom into the member 2 and loosely enclosing a portion of a rod 30. Each boss 32 has a nipple 33 screwed therein and slidably receiving a head 34 carried by the free end of the rod 30. Each nipple 33 has key slots 35 for receiving a suitable tool by which the nipple is drawn outward, thereby pulling the rod 30 by its head 34 and swinging the strips 25 out of the sash notches 26.

A pair of sleeves 36 extend from the plate 31 into the member 2 above and below the bushings 32. In each sleeve 36 is slidably mounted a shaft 37 having a finger 38 extending from one end through a slot 39 in the sleeve and into notches 40 and 40' in the corresponding channel 13 and slide 21. Each rod 30 carries a collar 41 from which projects a finger 42 entering a notch 43 in the corresponding shaft 37. The collar 41 is preferably loosely mounted on another collar 44 which in turn is fastened to the corresponding rod 30. Thus, when a nipple 33 is displaced inwardly in the manner described, the corresponding finger 42 moves with it and slides the shaft 37 to move its finger 38 out of engagement with the corresponding block 21 and channel 13. The blocks 21 are thus unlocked from their channels 13 by withdrawal of the fingers 38 to permit normal sliding of the sashes. However, when the sashes are to be swung, it is preferred that they do not slide, and at such time the fingers 38 are

engaged with the channels 13 and slides 21 therein by the means described.

When the nipples 33 are moved outward, the bottom 33' of each bears against the corresponding head 34. In the opposite direction, the bottom 33' bears against the adjacent collar 44.

The sashes 3 and 4 are preferably locked also at the frame member 1 against sliding when they are swung on their hinges. For this purpose the finger 18 at the lower end of each rocker 17 enters the aperture 18' in the adjacent channel 13 when the sash and its plate 19 are swung away from the rocker arm. The latter is so weighted that it assumes the locking position at this time, as shown in Figure 3. When each sash is swung to closed position, its plate 19 restores the rocker arm 17 to the release position shown in Figure 2, and connects the sash with the counterbalance chain 14. Finger 18 is double at 18'' if it is found desirable to hook plate 19 at 45.

The sashes can be swung only when the lugs 11 thereon register with the respective notches 12 which are located at a convenient swinging elevation for the sashes. When the lugs 11 register with the notches 12, the fingers 18 register with their apertures 18' and notches 40 register with their lugs 38.

Because of the provision of a control nipple 34 for each sash, it is evident that the inner sash 4 can be swung open while the sash 3 remains closed, if desired.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention as indicated by the appended claims.

What I claim as my invention is:

1. In a window comprising a pair of frame members and a pair of sashes slidable therein, hinges slidably mounted in one of said members and attached to said sashes, and lugs extending from said sashes and normally preventing hinged movement of said sashes, the last named frame member having notches at selected levels to receive said lugs and permit hinged movement of said sashes.

2. In a window comprising a pair of frame members and a pair of sashes slidable therein, hinges slidably mounted in one of said members and attached to said sashes, and lugs extending from said sashes and normally preventing hinged movement of said sashes, the last named frame member having notches at selected levels to receive said lugs and permit hinged movement of said sashes, a counterbalance chain connecting said sashes at one of said frame members, and means for locking said chain to said frame member at a level corresponding to the level where said lugs register with said notches.

3. In a window comprising a pair of frame members and a pair of sashes slidable therein, hinges slidably mounted in one of said members and attached to said sashes, weather strips pivotally mounted on the opposite frame member and interlocking with said sashes to prevent swinging thereof, a counterbalance chain connecting said sashes at the last named frame member, linkage extending from each weather strip for pivotally actuating the same, means for actuating said linkage, slides carried by the ends of said chain and guided in the last named frame member, slidably mounted fingers adapted to lock said slides to said frame member, and a connection between each linkage and the corresponding finger for

moving the latter to locking position on moving said weather strips out of interlocking engagement with said sashes.

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