

April 20, 1937.

J. R. HOWARD

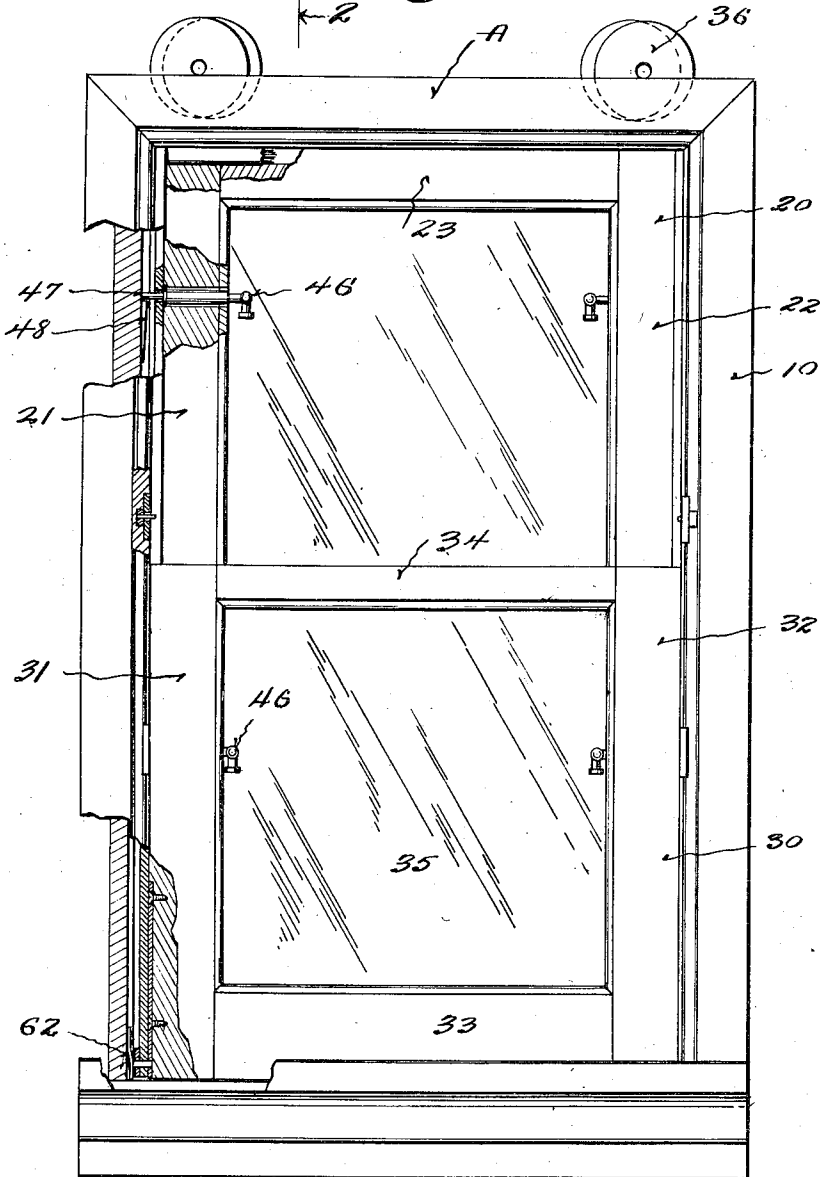
2,077,885

SWINGING WINDOW

Filed Feb. 20, 1935

3 Sheets-Sheet 1

Fig. 1.



← 2

Inventor
J. R. Howard
By *[Signature]*
Attorneys

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Fig. 2.

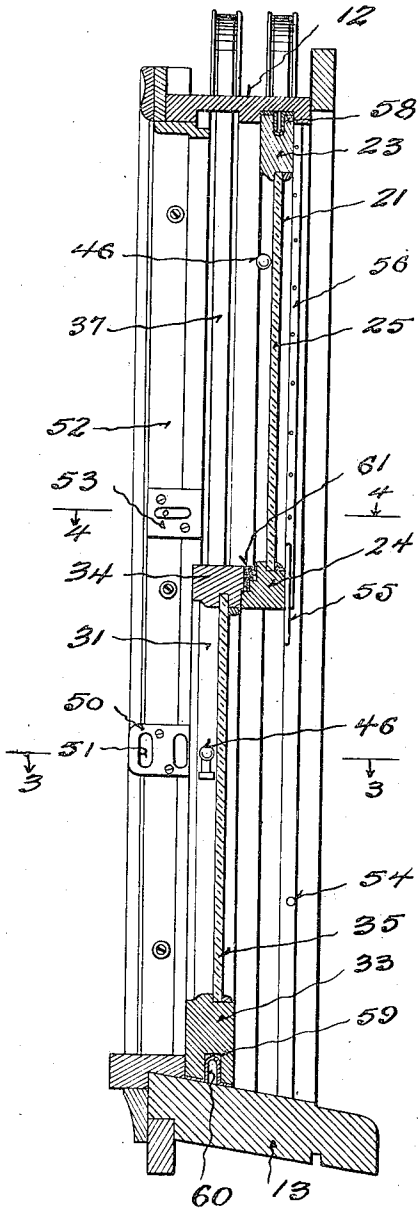


Fig. 7.

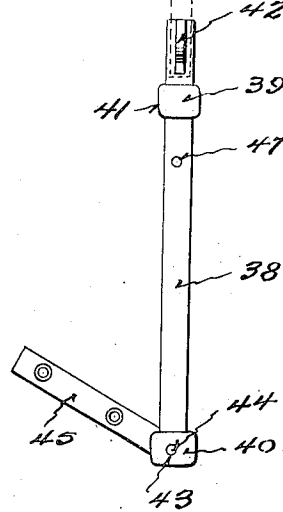
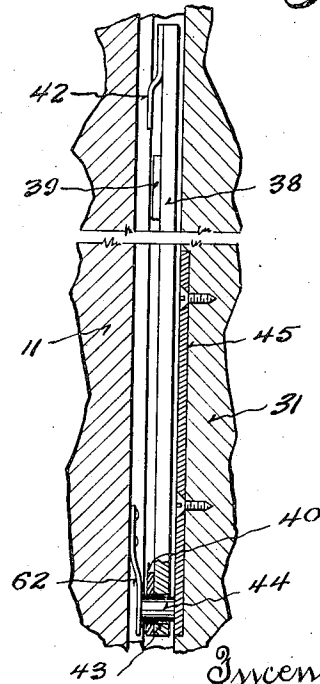


Fig. 8.



Inventor

J. R. Howard -
By *[Signature]*
Attorneys

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Fig. 3.

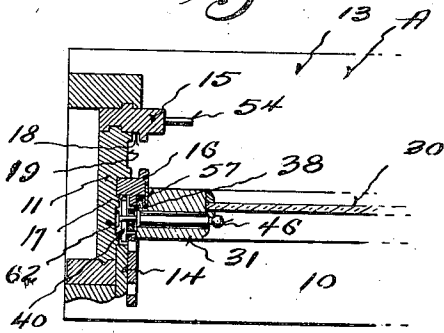


Fig. 4.

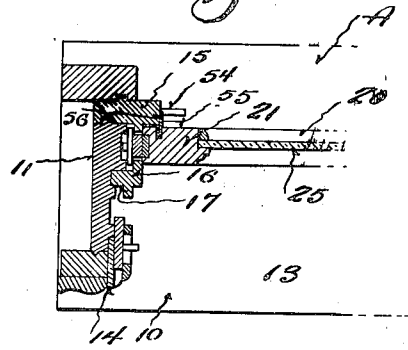


Fig. 5.

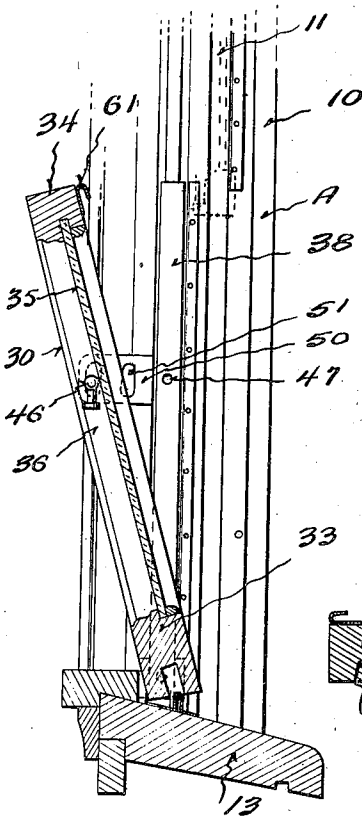
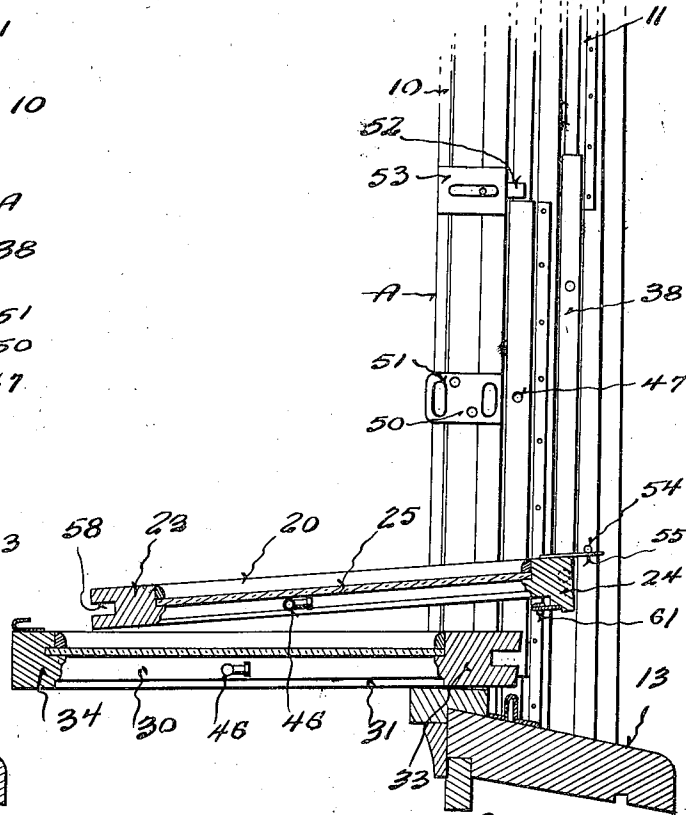


Fig. 6.



Inventor

J. R. Howard

By

[Handwritten signature]
Attorneys

UNITED STATES PATENT OFFICE

2,077,885

SWINGING WINDOW

Jesse R. Howard, Milwaukee, Wis., assignor to
Howard Safety Window, Incorporated, Mil-
waukee, Wis.

Application February 20, 1935, Serial No. 7,399

3 Claims. (Cl. 20—49)

This invention appertains to windows of the type embodying sliding and pivoted sashes, and is an improvement on my pending application for United States Letters Patent, Serial No. 654,214, filed January 30, 1933.

One of the primary objects of my present invention is the provision of novel slide plates carried by the window frame for the sashes, and novel means pivotally connecting the sashes with the slide plates, whereby free sliding movement of the sashes is permitted, as well as swinging movement, means being provided for detachably connecting the sashes to the slide plates above the sash pivot points, so that the sashes can be held against swinging movement.

Another important object of my invention is the provision of means whereby the lower sash can be swung to a partly open position for ventilation, and held in such position against further opening movement by unauthorized persons on the outside of the building.

A further important object of my invention is the provision of manually operated means for holding the slide plates against sliding movement when the lower sash is swung to its completely open position for cleaning and the like, whereby the sash can be conveniently held in such open position against movement during the cleaning process.

A further object of my invention is the provision of interengageable means carried by the upper sash and the frame when the upper sash is in its lowered position and swung into the room, whereby inadvertent raising movement thereof will be prevented.

A still further object of my invention is the provision of novel means for weather-stripping the window sashes so that a leak-proof window will be had when the sashes are in their closed position, the weather-stripping allowing the free sliding and swinging movement of the sashes.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a front elevation of a window, showing the features of my invention applied thereto, parts of the window being shown broken away and in section.

Figure 2 is a vertical section through the window taken substantially on the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a fragmentary horizontal sectional

view through the window taken substantially on the line 3—3 of Figure 1.

Figure 4 is a similar view taken substantially on the line 4—4 of Figure 1.

Figure 5 is a fragmentary vertical section through the window, showing the lower sash in its partly open position for ventilating purposes.

Figure 6 is a view similar to Figure 5, showing the upper and lower sashes in their completely opened position.

Figure 7 is a detail side elevation of one of the side plates, and the pivot arm carried thereby having connection with a sash.

Figure 8 is an enlarged fragmentary vertical section through a portion of the lower sash and window frame, illustrating the novel slide plate and the connection of the sash therewith.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my improved window construction, which comprises a window frame 10, and upper and lower sashes 20 and 30. The window frame 10 can be constructed substantially in the usual manner with my improvements connected therewith, and thus the frame includes the side stiles 11, the lintel 12, and the sill 13. The stiles 11 are provided with inner and outer stop beads 14 and 15, and the parting strip or bead 16. The facing portions of the beads 14, 15, and 16 are treated to provide respectively vertical guide grooves 17 and 18, for the upper and lower sashes, and the faces of the stiles are provided with longitudinal channels 19, for a purpose which will be later set forth.

Referring to the sashes, it can be seen that the upper sash 20 embodies side rails 21 and 22, a top rail 23, and a bottom or mid rail 24. The desired type of glass pane 25 can be secured in position in any preferred manner. The width of the upper sash is such as to freely pass the parting strip or bead 16, and the stop bead 14, to permit the swinging of the sash, as will be later set forth. The lower sash 30 is constructed similarly to the upper sash 20, and hence includes the side rails 31 and 32, the bottom rail 33, and the top or mid rail 34. The desired type of glass pane 35 is secured to these rails. The width of the bottom sash is such as to freely pass the stop beads 14 for permitting the swinging of the lower sash into the room when it is desired.

These sashes can be counterbalanced in any manner, and in the present instance I have shown the top of the window frame provided with spring drums 36 for this purpose, and these drums

carry flat metal strips 37 which travel in the channels 19 in the stiles. These strips are secured to the sashes in a novel manner, as will be later set forth.

5 In accordance with my invention I provide metallic or other slide plates 38 for the opposite sides of each sash, and these slide plates are received between the meeting faces of the beads 14, 15, and 16. Particular attention is invited to these 10 slide plates, and it is to be noted that each of the same are of an elongated character, and have welded or otherwise secured thereto top and bottom short cross plates 39 and 40, which project beyond the longitudinal edges of the plates. 15 These projecting ends of the cross plates 39 and 40 define guide ears or ribs 41, which are slidably received within the grooves 17 and 18 formed in the window frame. This construction allows the free sliding movement of the slide plates, and 20 prevents the plates from being displaced from the window frame.

The upper ends of all of the plates have welded thereto, or otherwise formed thereon, hooks 42 for receiving the lower terminals of the flexible strips 25 37. Hence, the counterbalancing means is connected directly to these slide plates. The extreme lower ends of all of the plates are provided with openings 43, which loosely receive elongated pivot pins 44, carried by the lower ends of the pivoted 30 arms 45. These pivoted arms are countersunk within the lower sides of the top and bottom sashes, and are secured to the sashes by the use of suitable fastening elements, such as screws or the like.

35 From the description so far, it can be seen that the sashes are mounted for free sliding movement with the slide plates, and can be swung on the slide plates into the room.

In order to lock the sashes against accidental 40 swinging movement relative to either slide plates, the side rails of both the sashes carry spring-pressed bolts 46, which are adapted to fit within the keeper openings 47 formed in the slide plates. These keeper openings 47 are a material distance 45 above the pivot points of the sashes, and hence when the bolts seat within the keeper openings, the sashes will be firmly held against opening movement. It is desired to utilize the upper bolts 46 for preventing the lowering of the upper sash 50 by unauthorized persons, when the sash is in its completely closed position, and when the lower sash is in a partly open position for ventilating purposes. Hence, keeper plates 48 are disposed within the channels 19 of the upper sash. These 55 keeper plates 48 have their upper ends provided with abrupt shoulders or faces against which the bolts are adapted to rest. Obviously, when the bolts engage these faces, lowering of the window is prevented. The keeper plates are of a wedge 60 shape so that the bolts will strike against the inclined faces thereof, when the upper window sash is being raised, so that the bolts will not have to be manipulated during the raising of the sash.

65 Obviously, the upper and lower sashes can be detachably connected together, when the same are in their completely closed position, by the ordinary window sash fastener (not shown).

70 As intimated above, the lower sash 13 can be partly swung into a room for ventilating purposes, and held in such position against further movement by unauthorized persons. To accomplish this the outer faces of the stop beads 14 have countersunk therein keeper plates 50, and these 75 plates are provided with one or more keeper slots

51 for the reception of the bolts 46 carried by the lower sash. In Figure 5 I have illustrated the lower sash in its partly opened position, and to swing the sash partly in the room the sash is raised a slight distance and the bolts are moved 5 inwardly towards one another, and out of the keeper recesses 47 formed in the slide plates 38. The sash is now swung on its pivots 44 the desired distance into the room, after which the bolts are released for movement into the preferred 10 keeper slots 51. Obviously, persons on the outside of the window cannot reach the bolts to manipulate the same.

When it is desired to swing the lower sash completely into the room, either for ventilating 15 purposes or for washing the opposite faces of the window pane, or for re-puttying the pane, the sash is slightly raised and the bolts moved inwardly toward one another so as to release the sash from its slide plates. The window sash can 20 now be swung completely into the room, but during the swinging movement the slide plates have a tendency to raise, which acts as a disadvantage when the outer face of the pane is being washed. I therefore provide manually actuated slide bolts 25 52 carried by the side stiles of the window frame. These bolts 52 can be mounted in suitable housings, or the like, 53, embedded or countersunk in the styles. These bolts 52 are adapted to be moved in the path of the slide plates 38 for the 30 lower sash, and hence upward sliding movement of the plates is prevented.

Means can also be provided for preventing upward sliding movement of the slide plates for the 35 upper sash when the upper sash is swung into the room. This means can consist of stop pins 54 carried by the stop beads 15 adjacent to their lower ends, and the lower or mid rail 24 of the sash can carry fingers 55. Thus, when the upper sash is moved to its lowered position, and swung 40 into the room, the fingers 55 will engage the pins 54, and upward riding movement of the sash will be prevented.

In Figure 6 I have shown both of the sashes 45 swung into the room, and obviously when the sashes are in this position the outer side of the pane of the upper sash can be easily washed and re-puttied if the occasion demands. It is to be also noted that when the sashes are in this position complete ventilation is had through the window 50 opening.

It is essential that windows of this character be thoroughly weather-stripped so that the same will be leak-proof during inclement weather and the winter season. In the drawings I have illustrated one efficient means for weather-stripping 55 the window, and, as shown, the parting and stop beads 15 and 16 are provided with metallic strips 56 and 57, respectively, which are adapted to fit within longitudinal grooves formed in the side 60 rails of the sashes when the sashes are in their vertical position. The top rail 23 of the upper sash is provided with a groove 58 for receiving a metallic weather-strip 59 carried by the lintel 12 of the window frame. The bottom rail 33 of 65 the lower sash is provided with a groove 59 for receiving a metallic weather-strip 60 carried by the sill 13. The mid rails of the top and bottom sashes carry the interfitting metallic strips 61.

In order to hold the lower sash firmly in its 70 lowered position against rattling movement, I provide leaf springs 62. These leaf springs 62 are set in the lower ends of the channels 19 for the lower sash. When the sash is moved to its lowermost position, these springs engage the slide 75

plates 38 for the lower sash and the pivot pins 44. Hence, all side or lateral shifting movement of the lower sash is taken care of.

From the foregoing description it can be seen that I have provided an exceptionally simple and durable means for forming a window having sashes capable of both sliding and swinging movement.

Changes in details may be made without departing from the spirit or scope of my invention, but what I claim as new is:

I claim:—

1. In a window construction, a window frame having stop and parting beads, the opposite faces of the beads being provided with vertical guide-ways, slide plates slidably mounted between the beads having upper and lower guide ears projecting laterally beyond the longitudinal edges of the slide plates slidably received in said guide-ways, arms pivotally mounted to the lower ends of the slide plates, window sashes for the frame, means securing the arms to the outer faces of the side rails of the sashes, and means for detachably locking the sashes to the slide plates at a point spaced from the pivot pins of the arms.

2. In a window, a window frame including stop and parting beads, the facing sides of the beads being provided with vertical guide-ways, slide plates mounted between the beads, upper and lower cross plates carried by the slide plates pro-

jecting beyond the longitudinal edges thereof and received within the guide-ways, pivot arms having pivot pins loosely received within the lower ends of the slide plates, window sashes for the frame, means connecting the pivot arms to the sashes, the slide plates being provided with keeper openings above the pivot pins, and lock bolts carried by the sashes for movement into and out of the keeper openings.

3. In a window, a window frame, including side stiles having longitudinal channels and stop and parting beads, facing portions of the beads being provided with vertical guide-ways, an upper sash, slide plates for the upper sash received between the parting bead and one stop bead, laterally projecting guide ears on the slide plates received in the guideways, pivot arms secured to the sash having pivot pins loosely received in the lower ends of the slide plates, the slide plates being provided with keeper openings, spring-pressed bolts carried by the sash for movement into and out of keeper openings, and latch plates disposed in the channels having abrupt upper ends disposed in the path of the bolts for limiting downward movement of the slide plates and the sash, the outer face of the keeper plates being inclined toward the abrupt face, as and for the purpose specified.

JESSE R. HOWARD.