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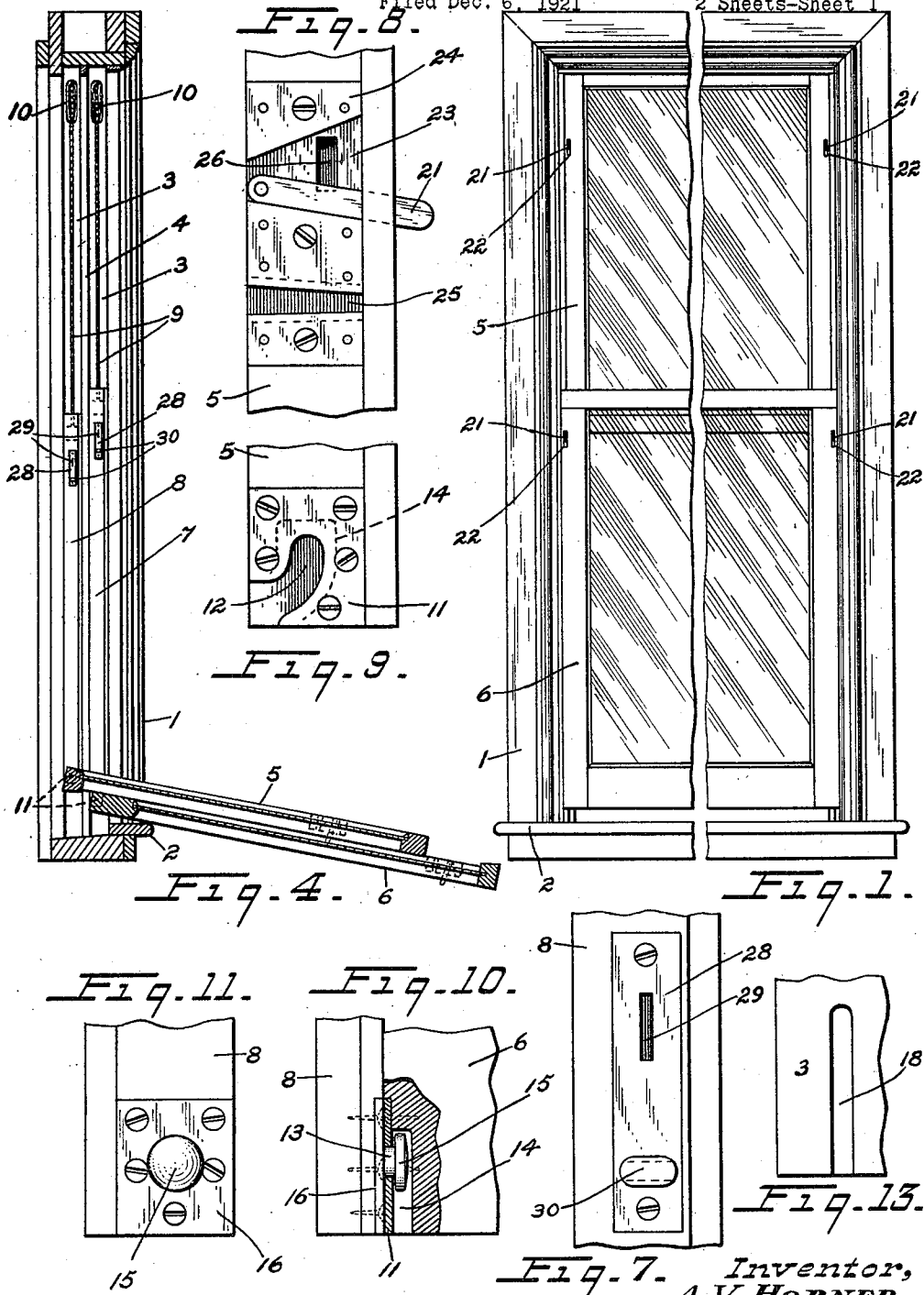
1,457,366

A. V. HORNER

WINDOW CONSTRUCTION

Filed Dec. 6, 1921

2 Sheets-Sheet 1



Inventor,
A.V. HORNER.
By Fetherstonhaugh & Co.
Attys.

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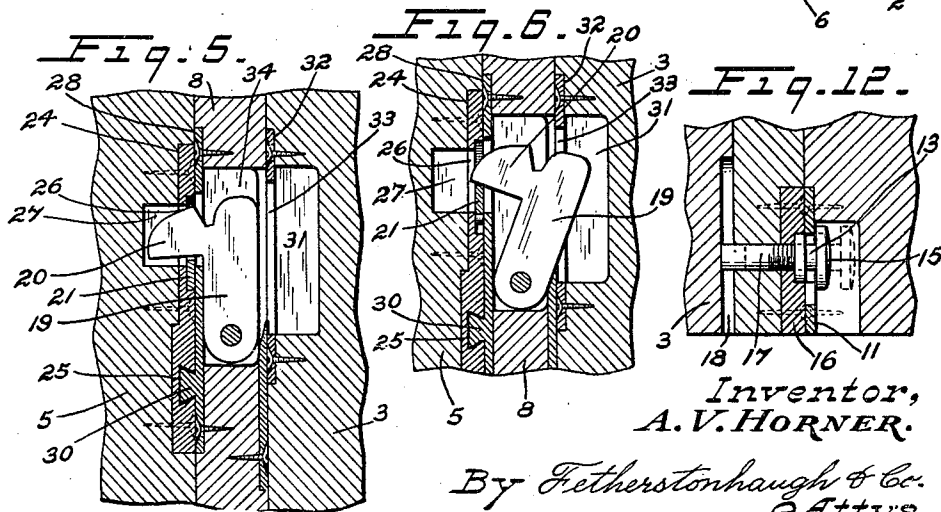
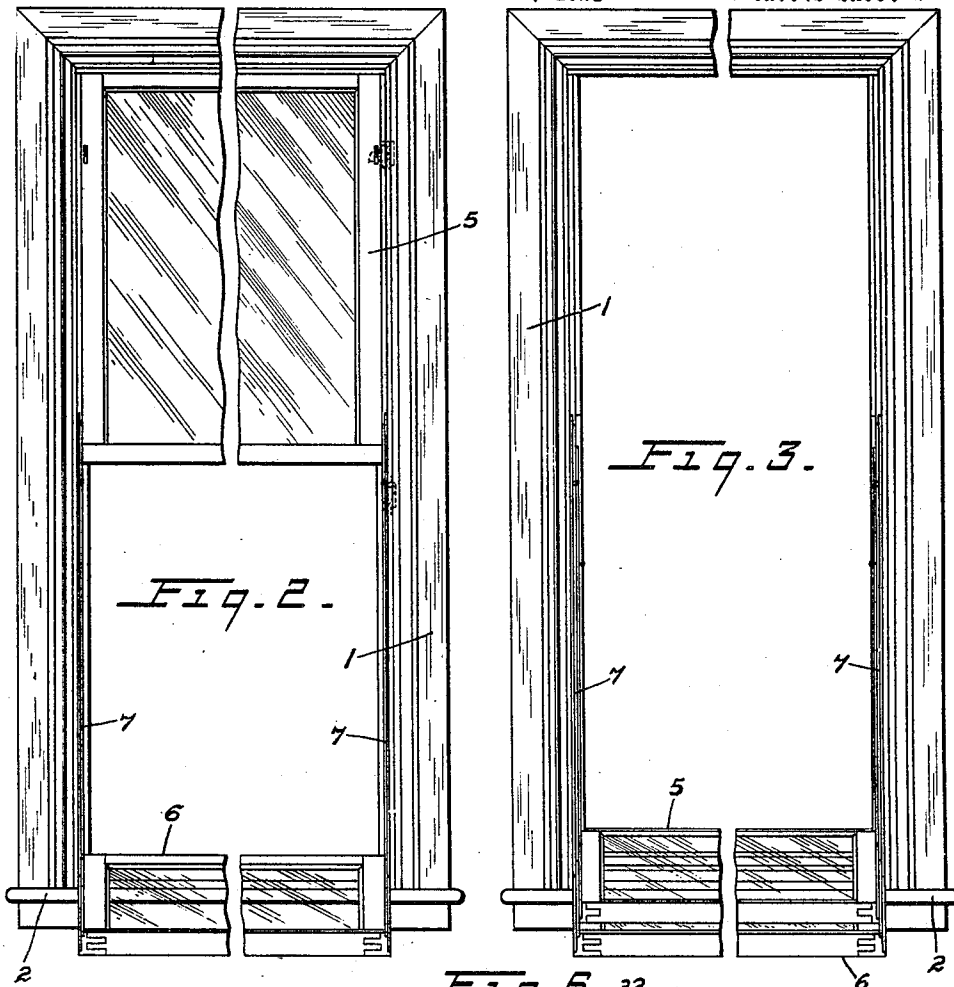
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

ALBERT VICTOR HORNER, OF TORONTO, ONTARIO, CANADA.

WINDOW CONSTRUCTION.

Application filed December 6, 1921. Serial No. 520,425.

To all whom it may concern:

Be it known that I, ALBERT VICTOR HORNER, a subject of the King of Great Britain, and a resident of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Window Constructions, of which the following is the specification.

My invention relates to improvements in window construction and the object of the invention is to devise means whereby both the upper and lower sash of the ordinary sash window of the type provided with slides between such upper and lower sashes may be swung inwardly for certain purposes such as cleaning.

A further object is to devise means whereby the sashes can be locked to the slides. A still further object is to devise means whereby the sashes in addition to being capable of being swung inwardly can be readily removed from the slides when in such position. Another object is to devise means whereby either the upper or lower sash can be locked against vertical movement beyond a certain predetermined extent in order that while fresh air may be admitted to the room a person could not get in at the window.

My invention consists of a window constructed and arranged all as hereinafter more particularly described and illustrated in the accompanying drawing in which:

Fig. 1 represents an inside elevational view of a window constructed according to my invention showing the same broken away intermediately.

Fig. 2 is a similar elevation to Figure 1 showing the bottom sash swung inwardly and resting on the sill.

Fig. 3 is a similar elevation showing both sashes swung inwardly, the upper sash resting on the lower sash which in turn rests on the sill.

Fig. 4 is a vertical cross sectional view showing the sashes in the position shown in Figure 3.

Fig. 5 is a vertical sectional detail showing one of the locking means for locking the sashes to the pulley slides.

Fig. 6 is a similar view to Figure 5 showing the locking mechanism about to be disengaged from one of the sashes.

Fig. 7 is a side elevational detail of one of the exposed plates of the locking mechanism.

Fig. 8 is a side elevational detail of the lever mechanism for actuating the locking mechanism illustrated in Figures 5 and 6.

Fig. 9 is a side elevational detail of the lower end of one of the sashes showing a hinge plate secured thereto.

Fig. 10 is a front elevational view of one of the lower corners of one of the sashes, showing the same partly in section and illustrating the connection between the hinge plate and the stud on the corresponding slide.

Fig. 11 is a side elevational view of the lower portion of one of the slides showing the stud secured to the inside face thereof.

Fig. 12 is a vertical sectional view of a modified form of stud which is double headed and adapted to be capable of being screwed inwardly or outwardly a certain extent, indicated in dotted lines, and

Fig. 13 is a side elevational view of the lower corner of one of the pulley stiles showing the same grooved up a certain extent to receive the end of one of the studs.

Like characters of reference indicate corresponding parts in the different views.

1 is the window frame. 2 is the window sill. 3 are the pulley stiles. 4 is the parting stop. 5 is the upper sash. 6 is the lower sash. 7 are the slides for the lower sash and 8 are the slides for the outer sash. 9 are the cords connected at their lower ends to the slides and passing over the pulleys 10 in the upper ends of the pulley slides and down into the casing of the frame of the window, said cords being provided with the usual weights, which are not shown as they do not form a part of the present invention.

11 are hinge plates suitably secured to the side faces of the sashes 5 and 6 in the vicinity of their lower ends, each hinge plate being provided with a suitably shaped slot 12 adapted to receive the studs 13, said slots being curved downwardly and forwardly as is illustrated in Figure 9. 14 is a recess (Figures 9 and 10) provided in each of the sashes behind each plate 11 to receive the corresponding head 15 of the stud 13.

Each stud 13 is suitably secured to a

plate 16 which is in turn secured to the inner face of each slide 7 and 8 in the vicinity of the lower end of the same.

In the modified form illustrated in Figures 12 and 13 a double headed stud 17 is provided which is threaded through the plate 16 and extends through the corresponding slide 7 or 8, as the case may be. With this form of stud the hinge plates can be mounted thereon as in the form shown in Figures 10 and 11, or if desired by screwing in the stud 17 until the free end extends into a slot 18 in each pulley stile 3, it will be seen that the window can be only opened to the extent of this slot.

Such slots 18 are provided in the vicinity of the lower ends of the inner pulley stiles, and if desired, intermediately in the case of the upper sash.

The locking mechanism for securing the sashes 5 and 6 to the slides consists of a plurality of pivoted dogs 19 which are (in Figures 5 and 6) pivotally secured in each of the slides 7 and 8, each of said dogs having an offset portion 20 and the operating levers 21 which extend through slots 22 in the inner faces of the sashes, being pivotally secured in recessed portions 23 in the plates 24 which are in turn suitably secured to the side faces of the sashes, each of said plates 24 having an inwardly tapering laterally extending dove-tailed slot 25 below the corresponding lever recess 23.

Each plate 24 has a vertical slot 26 extending through the same into the corresponding lever recess 23 and the sash behind each slot is provided with a recess 27 for the reception of the offset end of the dog 19 when in the position shown in Figure 5. 28 is a face plate suitably secured to the inner side of each slide 7 and 8, provided with a vertical slot 29 in the vicinity of the upper end of the plate through which the offset end 20 of the corresponding dog 19 extends.

A dovetailed laterally extending key 30 is provided in the vicinity of the lower end of each plate 28 adapted to co-act with the corresponding groove 25 in the plate 24. 31 are recesses suitably positioned in the pulley stiles 3 and 32 are face plates, each provided with the vertical slot 33, said face plates extending over the recesses 31.

The operation of the mechanism illustrated is as follows:

Assuming that the lower sash is in the position illustrated in Figure 1 wherein such lower sash 6 has been raised until the upper edge thereof reaches a mark on one of the parting stops 4, the dogs which are in the locked position will, as illustrated in Figure 5, now be free to be moved into the disengaged position wherein they are freed from the sash 6. Figure 6 illustrates the dogs just on the point of being released

and this is achieved by raising the levers 21 by hand. When such levers are raised the upper edge of each lever will engage the offset end 20 of the corresponding dog 19, forcing it outwardly until it is clear of the sash. When this occurs the upper ends of the dogs will be inserted into the recesses 31 in the pulley stiles 3 which are then immediately opposite the recesses 34 in the slides in which such dogs are pivotally secured. This action, as above stated, frees the dogs from the slides and the sash 6 will now be permitted to be swung down about the studs 13 and owing to the shape of the slots 12 in the hinge plate 11 it will be seen that such sash can be entirely removed if desired. Figure 2 illustrates the lower sash swung down as above described and resting on the sill. In such position should it be desired to remove the sashes it will be apparent that the dogs 19 will engage the upper edges of the recesses 31, thus preventing such slides 7 or 8, as the case may be, being moved upwardly when the weight of the sash is released.

The upper sash is actuated in exactly the same manner as above described only that the sash is lowered until the upper edge reaches a suitable mark on a parting stop 4. The marks are merely to indicate when the dogs 19 and recesses 34 are opposite the recesses 31 in the pulley stiles.

When it is required to replace the sash it is only necessary to hook the hinge plates 11 onto the studs 13, as is illustrated in Figure 10, and then swing the sash up until the side edges coincide with the slides, when by pushing the window down a certain extent the sash will be locked to the slides. This occurs on account of the inner faces of the dogs 19 engaging the face plates 32 and thus throwing the dogs inwardly into the position shown in Figure 5, wherein the offset ends 20 thereof enter the slots 26 in the plates 24.

In reference to Figure 5 it will be seen that when the dogs are in the locked position the sashes are free to be raised or lowered in the ordinary manner, and it is only when the sashes are in the proper position that they can be released from the slides.

Referring to the modified form of hinge joint illustrated in Figure 12 it will be seen that the hinge plates 11 can either be engaged between the inner and outer heads of the bolts 17 or on the opposite side of the inner heads if desired.

If the user wishes to lock the window so that it cannot be opened more than a small extent it is merely necessary to screw in the studs 17 until they are in the position shown in Figure 12 wherein the free ends of the studs will enter the grooves 18 in the pulley stiles and consequently the sash

can only be opened until such bolts engage the upper ends of such grooves.

In locking the sashes to the slides the wedge-shaped keys 30 on the plates 28 enter the tapered grooves 25 in the plates 24, and thus as the sash is pushed home the keys are wedged firmly in position.

From the above description it will be seen that I have devised a simple and effective mechanism whereby the sashes may be swung inwardly for the purpose above specified, and further whereby either sash may be removed entirely from the window.

Further I have devised a locking mechanism that will hold the sashes securely in engagement with the slides and in which there will be no danger of the same becoming inadvertently disengaged therefrom.

What I claim as my invention is:

1. In window construction, the combination with a window frame having sashes movably mounted therein, and slides interposed between the sashes and the jambs of the frame, of means for detachably hinging the sashes to the slides and means constituting part of the hinging means for locking the sashes against opening more than a predetermined extent.

2. In window construction, the combination with a window frame having sashes movably mounted therein, and slides interposed between the sashes and the jambs of the frame, of double headed hinge studs, plates suitably secured to the inside faces of the slides, said studs threaded through said plates and the free ends of said studs adapted to enter vertical slots in the inside faces of the frame upon the studs being screwed outwardly in the plates.

3. In window construction, the combination with a window frame having sashes movably mounted therein, and slides interposed between the sashes and the jambs of the frame, of double headed hinge studs, plates suitably secured to the inside faces of the slides, said studs threaded through said plates and the free ends of said studs adapted to enter vertical slots in the inside faces of the frame upon the studs being screwed outwardly in the plates, and hinge plates secured to the side faces of the sashes, said plates having forwardly and downwardly directed slots therein adapted to extend over the studs between their respective heads upon the studs being screwed outwardly and to engage the studs at the inner faces of the inner heads thereof upon the studs being screwed inwardly.

4. In window construction, the combination with a window frame having sashes movably mounted therein, and slides interposed between the sashes and the jambs of the frame, of means for detachably hinging

the sashes to the slides for permitting them to be swung inwardly, dogs pivotally mounted in the slides and adapted to engage slots in the side faces of the sashes for holding the same in their locked position with respect to the slides, said dogs having inwardly extending offset ends thereon adapted to enter said slots in the sashes and a dog actuating lever pivoted at each side of each sash and engaging the offset end of the corresponding dog, for swinging it outwardly clear of the corresponding slot in the sash, the free end of each lever protruding beyond the inner side of the sash.

5. In window construction, the combination with a window frame having sashes movably mounted therein, and slides interposed between the sashes and the jambs of the frame, of means for detachably hinging the sashes to the slides for permitting them to be swung inwardly, dogs pivotally mounted in the slides and adapted to engage slots in the side faces of the sashes for holding the same in their locked position with respect to the slides, said dogs having inwardly extending offset ends thereon adapted to enter the slots in the sashes in the engaged position and suitably pivoted operating levers engaging said offset ends of said dogs and permitting them to be swung outwardly clear of the slots in said sashes, the free ends of said levers extending through the inner sides of the sashes, the inside faces of the frame being recessed to receive the dogs upon the sash and slide being moved into a predetermined position.

6. In window construction, the combination with a window frame having sashes movably mounted therein, and slides interposed between the sashes and the jambs of the frame, of means for detachably hinging the sashes to the slides for permitting them to be swung inwardly, dogs pivotally mounted in the slides and adapted to engage slots in the side faces of the sashes for holding the same in their locked position with respect to the slides, said dogs having inwardly extending offset ends thereon adapted to enter the slots in the sashes in the engaged position and suitably pivoted operating levers engaging said offset ends of said dogs and permitting them to be swung outwardly clear of the slots in said sashes, the free ends of said levers extending through the inner sides of the sashes, the inside faces of the frame being recessed to receive the dogs upon the sash and slide being moved into a predetermined position and interlocking means between the slides and sashes adapted to engage upon the sashes being swung into the locked position with the slides.

ALBERT VICTOR HORNER.