

S. VIRAGH.
REVERSIBLE WINDOW SASH.
APPLICATION FILED MAR. 21, 1912.

1,087,202.

Patented Feb. 17, 1914.

2 SHEETS—SHEET 1.

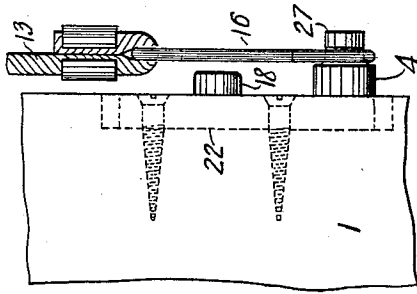


FIG. 6

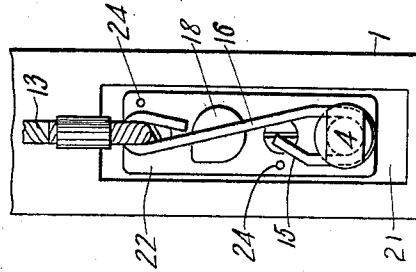


FIG. 7

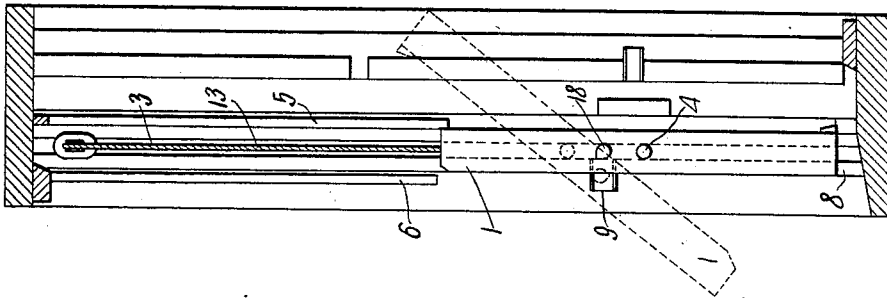


FIG. 3

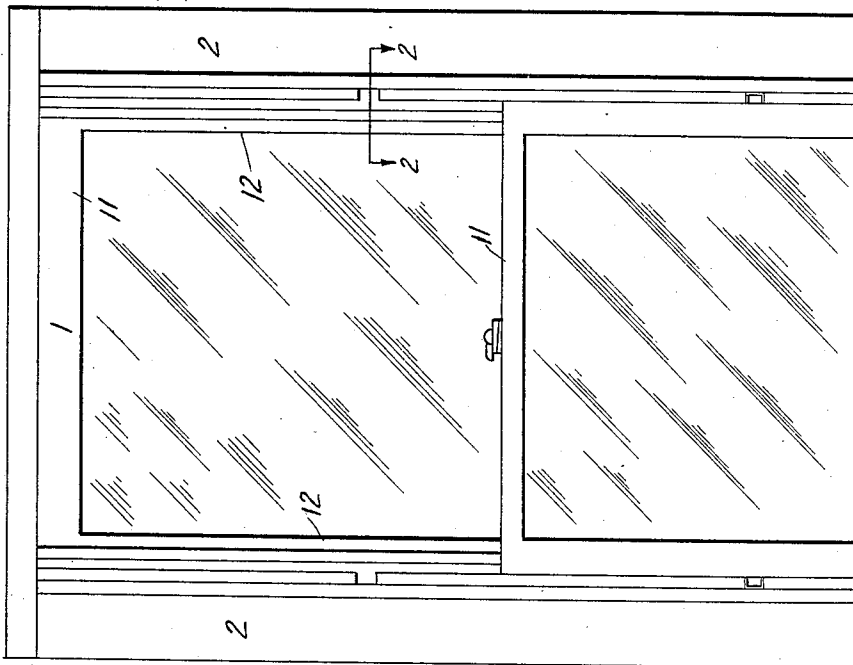


FIG. 1

WITNESSES

W. T. Stohman
E. L. Hyde

INVENTOR

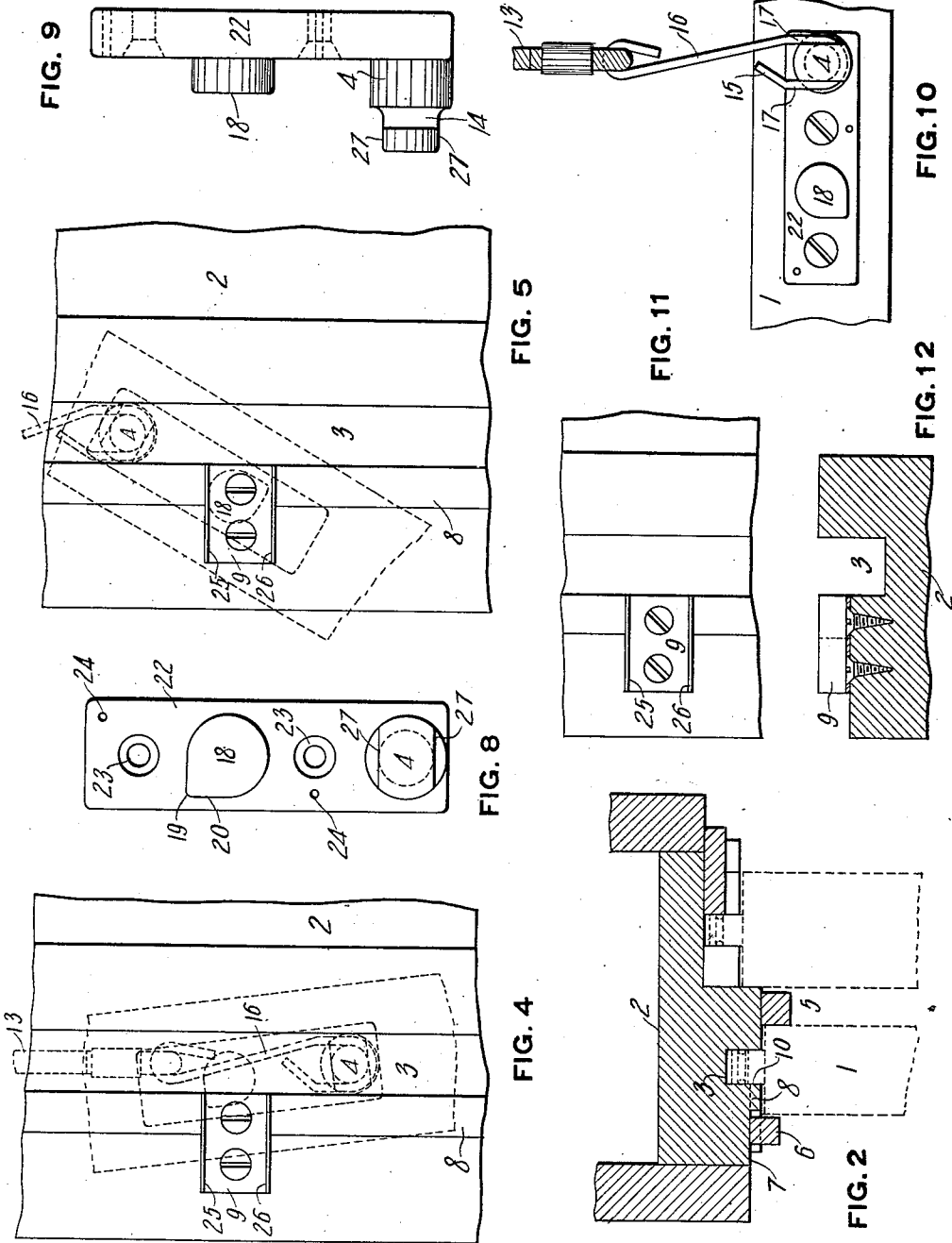
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2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

STEPHEN VIRAGH, OF SWISSVALE, PENNSYLVANIA.

REVERSIBLE WINDOW-SASH.

1,087,202.

Specification of Letters Patent.

Patented Feb. 17, 1914.

Application filed March 21, 1912. Serial No. 685,194.

To all whom it may concern:

Be it known that I, STEPHEN VIRAGH, a resident of Swissvale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Reversible Window-Sash, of which the following is a specification.

This invention relates to reversible windows.

The object of the invention is to provide a sliding sash window in which the sashes may be reversed in position by comparatively simple manipulation thereof, to permit access to, for cleaning or washing, of the outer surface of the sashes from the inside, to provide a construction in which the sashes can be easily and quickly placed in or removed from the frame with ease and with but slight manipulation of the frame, and to provide an improved construction of the character stated in which sliding motion of the sash is prevented at all times after the sash has begun to tilt or swing.

Further objects of the invention are in part obvious and in part will appear hereinafter.

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the drawings Figure 1 represents a front view of the upper part of a window constructed according to my invention; Fig. 2 is a horizontal cross section through one of the side stiles of the frame on the line 2—2, Fig. 1, the sashes being indicated in dotted lines; Fig. 3 is an elevation of the side stile shown at the right in Fig. 1, one sash being shown in normal position in full lines, and in reversed position in dotted lines; Fig. 4 is an enlarged detail view corresponding to Fig. 3, showing the sash partly reversed; Fig. 5 is a similar view, showing the sash fully reversed; Figs. 6 and 7 are detail views of the connection between the sash and one of its supporting means; Figs. 8 and 9 are detail views of a pivot block; Fig. 10 is a detail view, illustrating the sash in position for removal from its supporting means; and Figs. 11 and 12 are detail views of a portion of the pulley stile.

The present invention is in the nature of an improvement upon the form of window

shown, described and claimed in my prior application, Serial No. 674,447, filed January 31, 1912. That application shows a window in which the sashes may be reversed in the same general manner as the sash illustrated in the present application. The present application, however, offers an improved construction over that shown in the aforesaid application, for preventing the raising or lowering of the sashes after tilting or swinging of the same has begun, and for easily inserting and removing the sashes from the frame.

The invention is here shown as applied only to the upper or outer sash although obviously it may be applied or adapted, with equal facility, to the lower or inner sash, and is not to be understood as limited to the particular embodiment shown.

The window sash 1 shown in the drawing slides between said frame members or stiles 2, which are of substantially the same construction as those shown in my application referred to, and are thicker at their outer portions than at their inner portions. Each stile 2 is provided with a vertical groove, guide or runway 3 within which a lateral projection 4 on the sash engages and travels. Center beads or stops 5 are secured to the inner face of stiles 2 and, in assembling the window, are fitted against sash 1. These stops, for a purpose to be described, extend downwardly along the frame for a distance slightly greater than half the length thereof. Outer stops or beads 6 are also secured to the stiles 2, as shown, and extend downwardly along the frame less than half the length thereof. Pulley stiles 2 are recessed near their outer edges, as at 7, leaving ribs or ridges 8 between the recesses 7 and grooves 3. The ridges on both sides of the frames are cut out to the depth of the recesses 7 to form seats for socket plates 9. These are of channel shape in cross section and are screwed or otherwise secured to the stiles in their seats with their edges flush with the surface of ridge 8 and their ends flush with the wall 10 of groove 3. As shown, portions of the socket plates project past ridges 8 into the recesses 7.

The sash 1 is of the usual construction embodying upper and lower rails 11 and

vertical side stiles 12. It is hung on flexible supporting means 13 which are shown as cords, but may be chains or other means, as desired. These are connected to the projections 4, which are secured to the side stiles of the sash slightly above its center of gravity and are provided with annular grooves 14 to receive a fold or loop 15 of an S shaped hook 16, which is suitably connected at its other end to one of the cords 13. The connection described permits the sash to turn about the projections 4 as pivots or trunnions when its position in the frame will allow such movement. As will be readily understood, the sash cords 13 travel in the grooves or guides 3 and are connected at their other ends to the usual counter weights, not shown. That end of each of projections 4 extending beyond groove 14 is flattened at each side as shown in Figs. 6, 7 and 8, down to the bottom of groove 14. The flat faces 27 thus formed are at right angles to the centerline of the sash. Ordinarily loop 15 of wire hook 16 is securely confined in groove 14 by the undeformed portions of projections 4. When, however, it is desired to disengage projection 4 from its supporting means, the sash is brought into a horizontal position as shown in Fig. 10. By taking hold of the supporting means and holding the same in a fixed position against the pull of the counterweight, projection 4 can now be lifted out of hook 16, lower loop 15 being formed with parallel legs 17, as shown, which are long enough to provide sufficient room for the flattened portion of projection 4 to be withdrawn there-through when lifted.

The upper sash reverses or swings only when brought to a particular position in the frame, illustrated in Fig. 3. To prevent rotation or swinging of the lower sash at other positions in the frame, the sash is provided with retaining knobs, lugs or blocks 18, which are located on the side stiles of the sash either above or below the pivots 4 and are spaced therefrom in a manner herein-after described. These knobs are shorter than the pivots 4 and normally are engaged in the grooves or guides 3. Upon tilting or swinging of the sash they move into notches or pockets formed by socket plates 9, these socket plates being shallow and of less depth than the length of pivots 4, to prevent the possibility of the pivots moving into them.

In constructing a window according to my invention the socket plates 9 on opposite sides of the frame are carefully positioned horizontally in line with each other. The pivots 4 are each positioned the same distance from the lower edge of the sash and the knobs or blocks 18 are or should be spaced the same distance from their respec-

tive pivots. With a window so constructed the sash rotates into and out of normal position without binding or friction in the frame. To prevent improper manipulation of the sash, and especially raising thereof, after tilting movement has begun, each knob 18 is formed as a cylinder having an angular nose projection or enlargement 19 on the advance side thereof in the direction of tilting of the sash to reverse and on its side farthest from the pivot 4. This enlargement has a flat side face 20 which is in line with the side of the pivot and normally travels very closely adjacent to or in contact with the side wall 10 of groove 3. The length of socket plate 9 and width of ridge 8 are so proportioned, with reference to their cooperating parts on the sash, that when the latter is swung into horizontal position, socket plates 9 are long enough to retain knobs 18 in engagement with the frame, while ridge 8 is narrower than the space or distance along the sash between pivots 4 and knobs 18. When it is desired to remove the sash from the frame, all that is necessary is to unfasten a socket plate 9 on one of the pulley stiles 2, then swing the sash into horizontal position, thus bringing the knob 18, on the side where the socket plate 9 has been removed, out of engagement with the frame, so that by obliquely tilting the sash, knob 18 on the other side can be withdrawn from the socket, as well as the pivots 4 from grooves 3 on both sides of the window. By disengaging pivots 4 from the supporting means 13 in the manner hereinbefore described, the sash can thus be entirely lifted out of the frame.

To prevent the possibility of poor alignment from improper workmanship or spacing of the knobs and pivots these are formed in the present construction in the manner shown in Figs. 8 and 9. Each pivot 4 and its corresponding knob 18 are formed either integral with, or are otherwise rigidly secured, as by welding or brazing, to a solid base or pivot block 22 formed of metal and preferably of rectangular shape. This is provided with screw holes 23 for securing the block to the sash, and with two small holes 24 conveniently located to permit driving small nails, brads or tacks through them and into the wood on which pivot block rests, and thus temporarily fasten the latter in position until permanent securement with screws is effected. This method of temporarily fastening the pivot blocks 22 in place permits accurately positioning and alining them on the sash in an easy and expeditious manner, not possible if screws alone are used. The attachments described are made in pairs, one for each side of the window, and, as is obvious, are inversions of each other. For this reason only one has been

shown in the drawings. By rigidly securing the pivots and knobs to each other in the manner described it is possible in the manufacture of the attachments to secure exact corresponding spacing and alinement between the pivots and knobs at opposite sides of the sash. Nothing is left for the carpenter except to see that the two blocks used are spaced the same distance from the lower edge of the sash and lined up on the center line of the sash stile, in which he is assisted by the provision of center line tool marks on pivot blocks 22. As shown, each block is secured to the sash in a socket 21 and is screwed in place with its outer face flush with the surface of the stile, leaving the pivots and knobs projecting in the manner described.

The construction and operation of a window built according to my invention will be clear from the foregoing description taken in connection with the accompanying drawings.

Normally the sash 1 moves up and down in the frame in the usual manner with its pivots 4 and knobs 18 sliding in the grooves 3. Since the pivots are slightly above the center of gravity the sash has no tendency to turn. The side stops 5 and 6 prevent any willful tilting of the sash when it is opposite to them. Stops 5 on the inside of the sash, as stated, project downwardly more than half the length of the frame. Consequently the sash can never be moved to such position that its upper edge can swing inwardly. If, however, the sash is lowered until its upper edge is below outer stops 6 and is brought to the position shown in full lines in Fig. 3 its upper edge clears stops 6 and it may be reversed as shown. The sash now turns about the projections 4 as pivots, the knobs 18 entering the sockets 9. As soon as the sash is tilted the very slightest amount the corners of the noses or enlargements 19 on knobs 18 enter the sockets and become engaged under the upper shoulders 25 thereof. During the further tilting movement of the sash knobs 18 move farther into the sockets and along the upper shoulders 25 thereof, the noses 19 turning and moving downwardly toward the lower shoulders 26 of socket plates 9. From now on the sash completes its reversing movement around knobs 18 as centers, pivots 4 rising up in grooves 3 to the position shown in Fig. 5. When swinging the sash back into normal position, the pivots 4 begin to move downwardly in grooves 3 and the knobs 18 along the upper shoulders 25 of the sockets, until finally, the knobs 18 move entirely out of the sockets and into grooves 3. Since pivot blocks 22 are spaced accurately from the lower edge of the sash and socket plates 9 are fastened exactly the same distance above

the lower end of the frame, the sash reverses without binding in the frame or injury to its surface. When the sash has been rotated back into normal position it may then be moved up and down as usual.

What I claim is:

1. The combination with a frame having side members provided with vertical grooves therein, a sash slidable in said frame, pivots on said sash projecting into said grooves, retaining knobs on said sash spaced from and of less height than said pivots, said frame members being provided with shallow pockets of less depth than the height of said pivots to receive said knobs, said knobs each being provided with a projection on that side farthest from the pivot and on the advance side in the direction of rotation of the sash, said projections traveling in said grooves and closely adjacent to a wall thereof, and being adapted upon rotation of said sash to enter said pockets.

2. The combination with a frame having side members provided with vertical runways therein, a sash slidable in said frame and provided with pivots projecting into said runways, retaining knobs on said sash of less length than the pivots and spaced therefrom, said frame members being provided with notches to receive said knobs, said knobs each having an enlargement on its advance side in the direction of rotation of said sash, said enlargements traveling closely adjacent to walls of said runways and each arranged to enter its notch upon rotation of the sash, said retaining knobs being also each provided with a curved portion to ride against the upper shoulder of its notch when the sash is fully reversed.

3. The combination with a frame having side members provided with vertical grooves therein and with a rib adjacent to one wall of each groove, removable socket plates seated in said ribs and forming notches communicating with said grooves, a sash slidable in said frame and provided with pivots projecting into said grooves, retaining knobs on said sash spaced from said pivots, said ribs being narrower than the distance between said pivots and knobs, said knobs being adapted to enter said notches and, upon removal of said socket plates, to pass through said ribs.

4. The combination of a frame having side members provided with vertical runways and notches communicating with said runways, a sash slidable in said frame, and combined pivot and retaining knob members for said sash, each comprising a base, a cylindrical pivot rigid with said base and projecting into one of said runways, and a retaining knob also rigid with said base and of less height than said pivot and spaced therefrom, said retaining knobs each com-

prising a cylinder with its axis parallel with
that of the pivot and provided with an en-
largement arranged to normally travel
closely adjacent to the side wall of its run-
5 way, said angular enlargements being adapt-
ed to enter said notches when the sash is
turned.

In testimony whereof, I have hereunto
set my hand.

STEPHEN VIRAGH.

Witnesses:

E. LE HYDE,
MARY E. CAHOON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
