(No Model.)

S. H. RUSSELL.

SASH BALANCE.

No. 329,856. Patented Nov. 3, 1885.

Fig. 1.

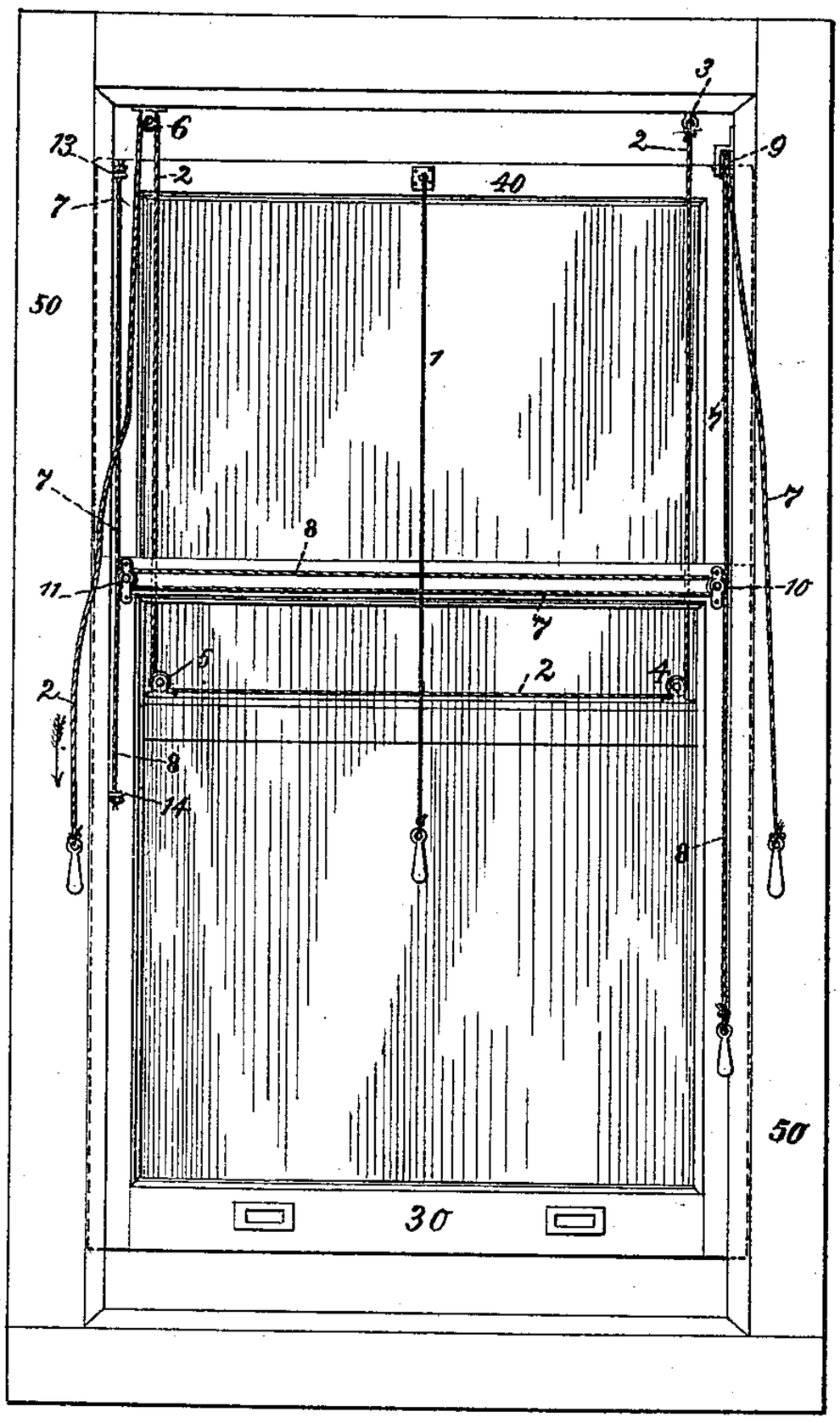
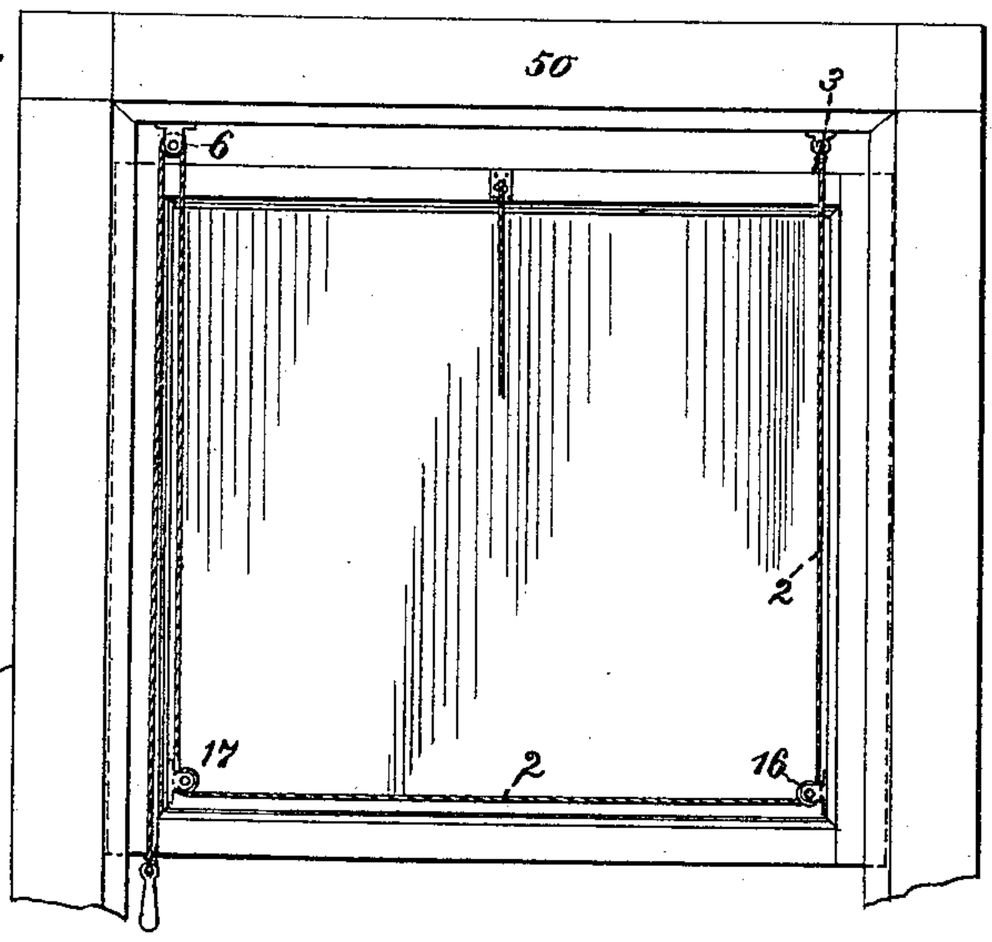


Fig. 2.



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S. HOWLAND RUSSELL, OF NEW YORK, N. Y.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 329,856, dated November 3, 1885.

Application filed April 28, 1885. Serial No. 163,693. (No model.)

To all whom it may concern:

Be it known that I, S. HOWLAND RUSSELL, a citizen of the United States, residing at New York, in the city and county of New York, have invented certain new and useful Improvements in Devices for Raising and Lowering Window-Sashes, of which the following is a specification.

My invention relates to that class of devices wherein systems of cords are arranged to operate on pulleys secured to the window frame and sashes, so that by the manipulation of the cords the sashes may be raised or lowered. Illustrations of this class of devices may be seen in my former patents numbered 261,877, 297,720, and 298,122, issued to me August 1, 1882, April 29, 1884, and May 6, 1884, respectively, in all of which patents there are shown systems of cords and pulleys for raising and lowering the sashes; but in all the arrangement is such that the upper sash carries pulleys that are secured to its face, whereas my present invention consists, among other things, in such an arrangement of the various systems of cords and pulleys as to leave the face of the upper sash free and clear, in order that the position of the sashes may be reversed and the sashes made to pass each other—that is to say, the upper sash can be lowered to the window-sill and the lower sash raised to very near the top of the window-frame.

My invention further consists in providing the lower sash with double-sheaved pulleys that are adapted to receive both the opening and the closing cords employed in the adjustment of said sash, as will be hereinafter more fully set forth.

In the drawings, Figure 1 presents a front elevation of an ordinary window-frame in which the sashes are provided with my improved operating devices; and Fig. 2 is a view of a portion of the window-frame with the upper sash, showing a modified arrangement of the pulleys.

In these views, 50 indicates the window-frame, in which the upper sash, 40, is shown as being slightly lowered, and the lower sash, 30, as slightly raised. These sashes are mounted, guided, and counterbalanced in the ordinary well-known manner, so that when raised or lowered they will remain in the position in which they have been placed until they are again manipulated.

The two sashes 30 and 40 are operated by entirely distinct systems of cords, and consequently either sash may be raised or lowered at will without attention being paid to the position of the other sash. Each of the sashes is provided with an opening and a closing cord, the opening-cord of the upper sash being shown at 1, and consisting in a simple cord secured in a recess formed in the center of the upper cross-bar of the sash-frame 40. It will be clearly seen that a direct downward pull on the cord 1 will lower the sash 40, which is returned to its normal closed position by the cord 2, one end of which is fastened to the window-frame at the point marked 3; thence it passes down to the pulley 4, which is secured to the lower cross-bar of the sash 40, inside the face-line of said sash; then parallel with said cross-bar to the pulley 5, secured in a position corresponding to that of pulley 4, but on the opposite side of the sash; then up to and over pulley 6, which is fixed to the upper part of the window-frame, and finally down to within the reach of the operator, the lower and free end of the cord being knotted or secured to a handle, as shown in the drawings.

Should the sash 40 be in the position shown in the drawings, and it was desired to close it, the cord 2 would be pulled down in the direction of the arrow and the sash raised, which change in the position of the sash is the more easily accomplished, as the arrangement of the cord 2 and the pulleys over which said cord passes is such that the force applied to the end of the cord is doubled in its effect upon the sash.

The sash 30 is both raised and lowered by cords, which act upon pulleys in which the sheaves for the opening and closing cords are carried in the same block, said cords being shown at 7 and 8 in the drawings. The cord 7, by which the sash 30 is opened, passes from its free end up over a pulley, 9, fixed to the window-frame, and then down under and partially around one set of sheaves carried by the blocks 10 and 11, that are secured to the sash-frame, and the end of the cord is finally fixed to the window-frame at about the point

marked 13, while the cord 8, by which the sash is closed, passes directly from the hand to and over a second set of sheaves carried by the blocks 10 and 11, and thence down to about the point 14, where it is made fast to the window-frame 50.

By such an arrangement as I have described either sash can be positively raised or lowered without in any way interfering with the position of the other sash, and as the face of the upper sash is unincumbered there is nothing to prevent the reversal of the normal positions of the sashes, which it is particularly desirable to do when it becomes necessary to clean the glass.

In Fig. 2 I have shown the pulleys 16 and 17 as being secured to the side bars of the sash 40, but within the face of the frame, said pulleys taking the place of the pulleys 4 and 5 shown in Fig. 1, which are fastened to the base-bar of the sash within the face of the sash, instead of to the side bars, as in Fig. 1. In both cases it will be seen that the pulleys 4 and 5 do not project on the face or beyond the outer plane of the sash, as heretofore, but are fixed on the edge of the sash-bars within the plane of the outer surface of the sash and between the same and the glass pane, and hence do not protrude beyond the sash, and therefore offer no obstruction to the free movement of one sash fully over and past the other, which has not been the case in my former invention, and which is a very desirable improvement.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the window-frame 50, sashes 40 and 30, pulleys 4 and 5, fixed to the upper sash, as shown, stationary pulley 6, and cord 2, fixed at one end and passing over said pulleys, substantially as shown and described.

2. The combination, with a window frame and sashes, of the pulleys 10 and 11, fixed to the lower sash, the pulley 9, fixed to the upper part of the window-frame, and the cord 7, fixed at one end to the window-frame and passing over said pulleys, substantially as shown and described.

3. The combination, with a window frame and sashes, of the pulleys 10 and 11, fixed to the lower sash and having a double set of sheaves, the pulley 9, fixed to the upper part of the window-frame, the cord 7, fixed at one end to the top of the window-frame, passing over one set of sheaves in pulleys 10 and 11, and thence over pulley 9, and the cord 8, fixed at one end to the lower part of the window-frame and passing over the second set of sheaves in pulleys 10 and 11, substantially as and for the purpose set forth.

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