(No Model.)

W. J. THOMPSON.

SASH BALANCE.

No. 347,396. Patented Aug. 17, 1886.

Fig. 1.

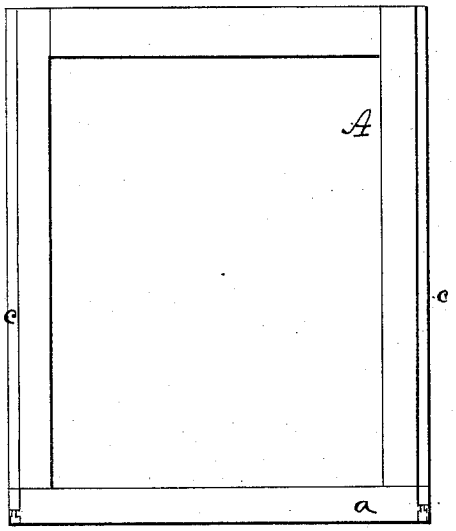


Fig. 2.

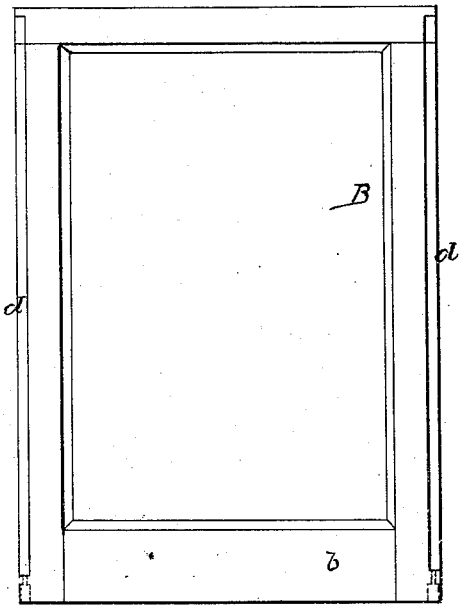


Fig. 5.

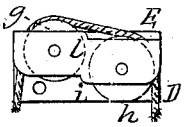


Fig. 3.

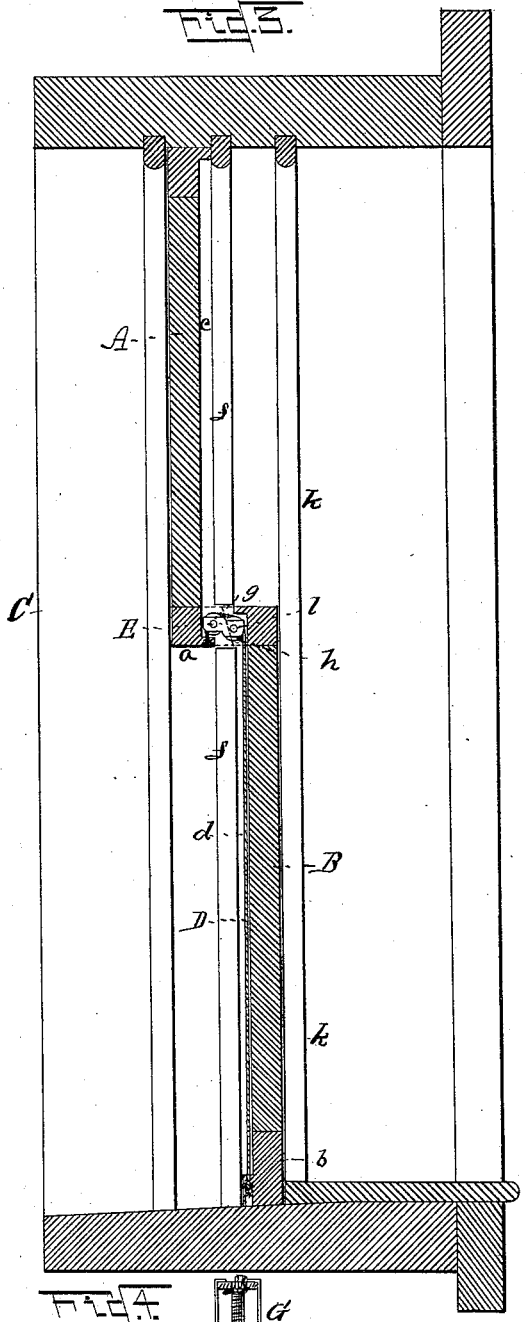
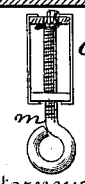


Fig. 4.



Witnesses
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John K. Orrell

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UNITED STATES PATENT OFFICE.

WILLIAM JOSEPH THOMPSON, OF ST. PAUL, MINNESOTA.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 347,396, dated August 17, 1886.

Application filed April 13, 1886. Serial No. 198,698. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH THOMPSON, a citizen of the United States, residing in St. Paul, in the county of Ramsey and State of Minnesota, have invented an Improved Sash-Balance; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

My invention belongs to the class of counter-balances in which one sash balances the other and weights are dispensed with; and my invention consists in the improvements hereinafter specified.

In the accompanying drawings, Figure 1 represents a front side view of the upper sash of a window constructed for receiving my improved sash-balance; Fig. 2, a rear side view of the lower window-sash constructed for receiving my improved sash-balance; Fig. 3, a vertical section through the top and bottom of a window-frame, through the two sashes near their side edges at the side of the window, through the window-strips forming the sash-runs, and showing my improved sash-balance in place; Fig. 4, a view of a cord-fastening device sometimes used with the sash-balance; Fig. 5, a detail view of the sash-cord pulley used.

Like letters designate corresponding parts in all of the figures.

In the drawings, A represents the upper sash, B the lower sash, and C one of the jambs of a window-frame provided with my improved sash-balance. The single sash-cord D at each side of the window is applied at one end to the upper sash, A, as near as practicable to the lower edge thereof, and is fastened to the lower or meeting rail, *a*, of the sash, and at the other end the cord is applied to the lower sash, B, as near the lower edge thereof as practicable, being also secured to the lower rail, *b*, of the same. The inner edge of the upper sash, Fig. 1, at each side is rabbeted or grooved at *c* from the lower rail, where the balance-cord is attached, up nearly to the upper edge of the sash; but there may be a little distance at the upper edge where it is not rabbeted or grooved, in order to conceal the cord from view when one is looking down upon the upper edge of the sash. In like manner the outer edge of the lower sash, Fig. 2, is rabbeted or grooved at *d* from its lower rail, where the balance-cord is attached, up nearly to the upper edge of the sash. These rabbets or grooves are close to the side edges of the sashes, so that they and the sash-cords located in them shall be concealed from view by the parting-strips *f* between the sashes, thereby not disfiguring the window in the least by the appearance of the balance-cords or of their pulleys and pulley-plates, as is the case with the cords, pulleys, and pulley-plates of weight sash-balances.

The sash-cords run, respectively, over two small pulley-sheaves, *g h*, mounted on pulley-plates *i*, which are screwed to the window-jamb C, reaching into both sash-runs through mortises or apertures cut through the parting-strips, as shown in Fig. 3. The location of each pulley E is below the upper edges of both sashes when each is lowered to the bottom of its run. In fact, the pulleys are placed as low as practicable, in order to conceal them from view, below the upper edges of the sashes. The rear sheaves, *g*, for suspending the upper sash, are a little higher than the front sheaves, *h*, for suspending the lower sash. This enables the front sheaves to be placed a little lower than they otherwise could be placed, so as to more effectually conceal them from view, and this arrangement fulfills an additional purpose.

The parting-strips *f* are each divided in two parts just at the point where the pulley E is located, the upper part being fixed and the lower part being removable. This enables the upper sash to be very readily removed for setting glass in it or other purposes, and again as readily replaced.

By the construction shown and set forth, in taking out the sashes, first the inner strips, *k*, which complete the runs for the lower sash, are removed, as usual. Then, after propping up temporarily the upper sash, the balance-cords are detached from the lower sash, which is removed. Then the lower parts of the parting-strips *f* are removed, which leaves free space for the upper sash, after it is brought down to the bottom of its runs, to be removed by first drawing out its lower edge, which, after its

upper edge has passed under the rear pulleys, *g*, arranged high enough for the purpose, can be withdrawn under the front pulleys, *h*. The sash-cords are thus completely drawn from the pulleys and allowed to remain attached to the upper sash. On returning the sashes to the window-frame, the manipulations above specified in order are reversed. None of the difficulties and troubles experienced in taking sashes from windows provided with balance-weights are here encountered.

Each pulley E has a guide bar or strip, *l*, outside of its sheaves, to furnish bearings for the pivots of the sheaves, and guides to prevent the cords from running off from the sheaves.

Although ordinary hemp or cotton sash-cords may be used in this improved sash-balance, I prefer and intend to use wire cords, both because they will not stretch and disarrange the proper relative positions of the sashes and because they may be much smaller, thus enabling much thinner pulley-sheaves to be used, subserving both economy and completeness of concealment. Any ordinary means of attaching the ends of the cords to the sashes may be employed—as, for instance, by knots in the ends of the cords sunk in holes in the sash as shown in Fig. 3; but for the purpose of adjustment, especially when fibrous cords are used, to provide for stretching of the same, a device as shown in Fig. 4 may be used. It is a metallic holder, G, attached to the sash, having a hole to receive the cord, and a holding-screw, *m*, to screw tightly against the end of the cord, as shown. On loosening the screw the cord can be shortened up or lengthened out, and then the screw again be tightened against the cord.

Ordinarily the lower sash is a little heavier than the upper sash, because the lower rail of the lower sash is made somewhat wider than the upper rail of the upper sash, and the two meeting-rails are usually of the same width; but it is best to have the lower sash a little heavier than the upper, so that it will be sure to hold both sashes closed. The ordinary friction of the sashes in their runs compensates for this difference of weight of the sashes, and holds both sufficiently balanced at any height.

It is of course obvious that such a sash-counterbalance is much cheaper than a weight sash-balance, in that the cost of the weights is dispensed with, as also half of the length of cord and half of the suspending-pulleys.

I claim as my invention—

The combination of the upper and lower sashes of a window, connecting sash-cords attached each to both sashes near the lower edges and located near the side edges thereof, and pulley-plates attached to the window-jambs below the upper edges of the lowered sashes and reaching through the parting-strips between the sashes, each pulley-plate having two sheaves reaching, respectively, into the two sash-runs on each side of the window, substantially as and for the purpose herein specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM JOSEPH THOMPSON.

Witnesses:
LOUIS FEESER, Jr.,
M. H. ALBIN.