(No Model.)

C. FORTH.

SASH BALANCE.

No. 424,414. Patented Mar. 25, 1890.

Fig. 1.

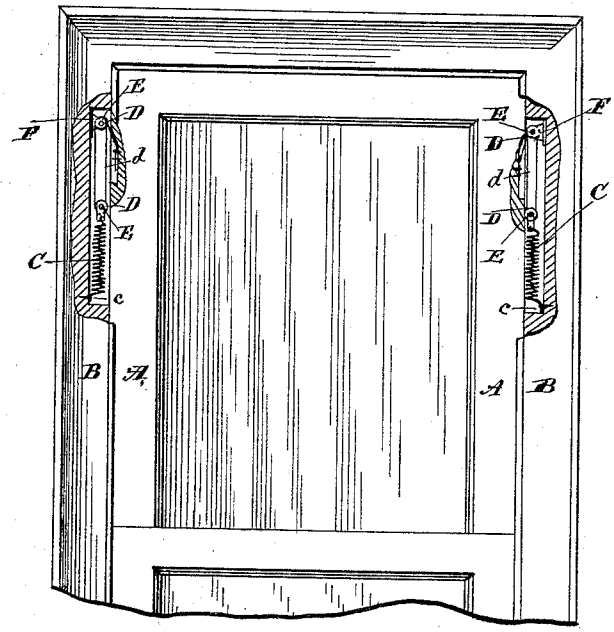


Fig. 2.

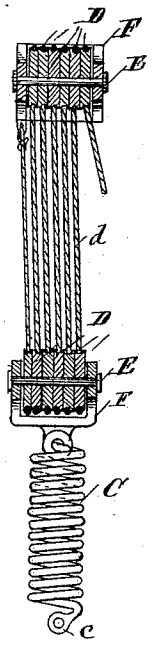


Fig. 3.

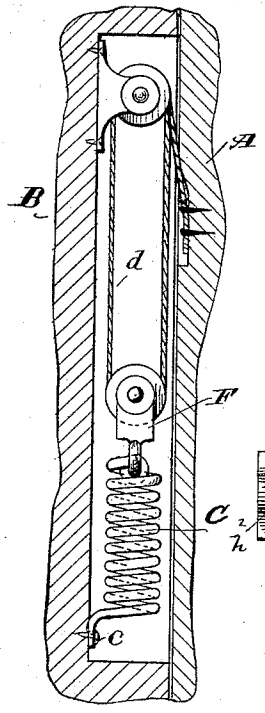


Fig. 4.

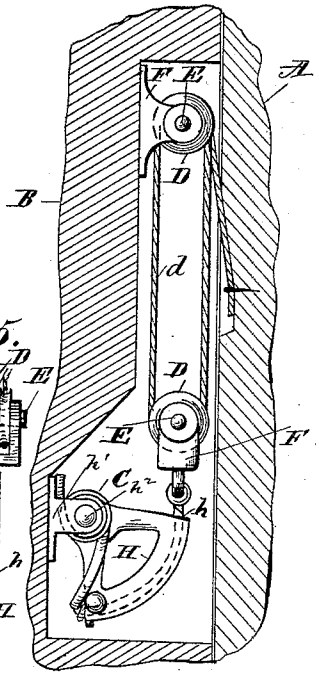
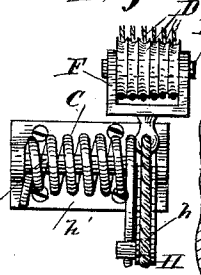


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES FORTH, OF CLEVELAND, OHIO.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 424,414, dated March 25, 1890.

Application filed September 21, 1889. Serial No. 324,696. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FORTH, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Window-Sash Balances, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in window-sash balances; and its objects are to simplify the construction of the window-jambs over those prepared for sash-weights, to economize space, and to lessen the initial cost and subsequent expense of adjusting and repairing the devices heretofore required in balancing window-sash.

My invention consists in utilizing the differential power obtained by the employment of the "block-and-tackle" device in connection with a helical spring in place of the cord and weight heretofore used, and in the combination, arrangement, and construction of the various parts, as hereinafter described, shown in the drawings, and more particularly pointed out in the claim.

In the accompanying drawings, Figure 1 represents a broken section of a window-casing and inclosed window with my invention attached to the sash on either side and inserted in the jamb. Fig. 2 is a detail of the device, showing the pulleys in longitudinal section; and Fig. 3 shows the device in side elevation. Figs. 4 and 5 show modified forms in which a horizontal spring and bell-crank are employed.

In the figures, A is the sash; B, the jamb, provided with a hollow space in its upper portion to receive the spring C and pulleys D, with their supporting-axles E and bearings F.

In Fig. 1 the lower end of the spring C is rigidly attached to the jamb at *c*, while to the upper end is attached the bearing F for the lower set of pulleys D. All these pulleys have an independent movement on their axes.

In Figs. 4 and 5 a bell-crank H is employed, to which the lower bearing F is attached, the spring C being wrapped about its axis horizontally. The upper bearing is attached to the jamb in such proximity to the lower bearing that the cord *d* supporting the window-sash will be of the proper length when the window is shut.

In Figs. 4 and 5 the lower bearing F is attached to the bell-crank H by the intermediate cord *h*, which preserves the vertical position of the pulleys and cord *d*. The bearing *h'* and axis h^2 support the bell-crank.

In Fig. 1 the upper window is shown as closed and the cord fully extended between the pulleys, of which there are six, and attached to the upper bearing at one end and at the other to the window.

The advantages of this form of sash-balance are obvious. It will readily hold the window at any altitude without moving, and being a perfect balance for the same prevents any difficulty in raising or lowering it. It also occupies but a small portion of the upper part of the jamb, and dispenses with the expensive sash-weight boxes heretofore considered necessary. It is easily accessible for adjustment or repair. It may also be placed upon the sash, and can equally well be adapted to old window sash or frames. In use the strength of the spring is adjusted to the size and weight of the window and the length of the cord and distance between the bearings to the length of the run of the window.

I do not claim as my invention, broadly, "block-tackle," or the particular shape or arrangement of parts as shown; but

What I do claim, and desire to secure by Letters Patent, is—

In a sash-balance, a block-and-tackle device for suspending the sash, in combination with a bell-crank and coiled spring arranged horizontally and operated by the bell-crank.

CHARLES FORTH.

Witnesses:
WM. M. MONROE,
F. H. MOORE.