

A. SMITHERS.
SASH-BALANCE.

No. 171,960.

Patented Jan. 11, 1876.

Fig 1.

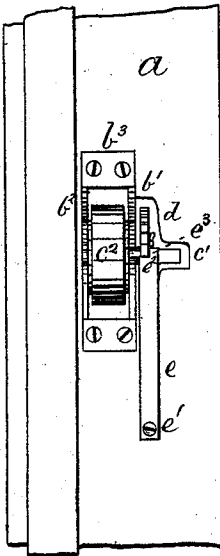


Fig 2.

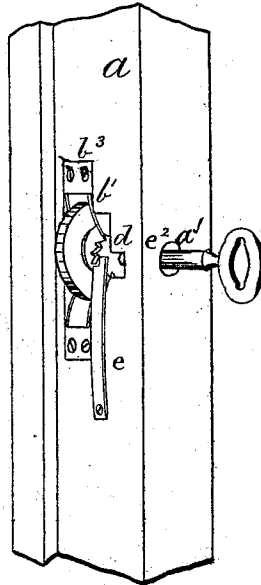


Fig. 7.

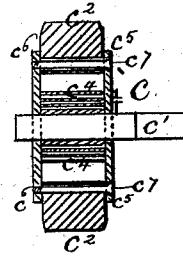


Fig. 8.

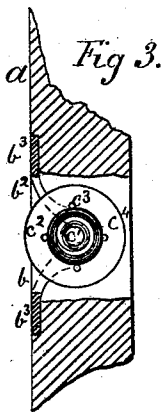
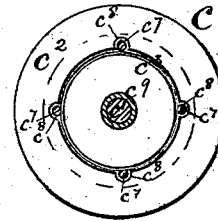


Fig 4.

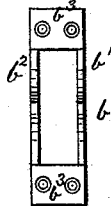
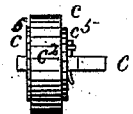


Fig 5.



Fig 6.



Attest.

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UNITED STATES PATENT OFFICE.

ALEXANDER SMITHERS, OF GALLATIN, TENNESSEE.

IMPROVEMENT IN SASH-BALANCES.

Specification forming part of Letters Patent No. **171,960**, dated January 11, 1876; application filed April 13, 1875.

To all whom it may concern:

Be it known that I, ALEXANDER SMITHERS, of Gallatin, in the county of Sumner and State of Tennessee, have invented certain new and useful Improvements in Sash-Balances; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in that class of sash-balances in which a coiled spring, arranged within a revolving casing, provided with an external elastic friction-surface, is employed to balance the weight of the sash, there being also a spring-pawl and ratchet-wheel; and my invention consists, essentially, in the novel combination and arrangement of these parts, as will be hereinafter more fully set forth, and pointed out in the claim.

In the drawings, Figure 1 represents a side, and Fig. 2 a perspective, view of a portion of a window with my improvements applied thereto. Figs. 3, 4, 5, 6, 7, and 8 represent detail views of parts.

In each of the views similar letters of reference are employed to indicate corresponding parts wherever they occur.

a is the window-casing, which is suitably mortised or recessed for the reception of the balance. *b* is a frame or support adapted to be placed and retained by screws or other suitable retaining means within the mortise or recess in the casing *a*. The frame *b* is composed of the side plates *b*¹ *b*² bent inwardly, and provided with bearings for the axle *c*¹ of the balance-wheel *c*. The side plates *b*¹ *b*² are retained in correct relation the one to the other, and the entire frame *b* held in position in the mortise by means of the cross-plates *b*³, which are provided with suitable holes for the passage of screws, as shown. The cross-plates *b*³ are so arranged in relation to the bearings for the axle *c*¹ that the rim of the balance-wheel *c* shall project sufficiently beyond the face of the casing *a* as to obtain a firm hold on the sash. The balance-wheel *c* is composed of a drum, *c*³, held firmly between a pair of circular plates or disks, *c*⁵ *c*⁶, by

means of a series of screws, *c*⁷, the heads of which are received into recesses in the disk *c*⁵, while their threaded ends are received and held in the plate or disk *c*⁶. The retaining-screws *c*⁷ are arranged externally of the drum *c*³, and are received into notches or recesses *c*⁸ formed in the elastic ring *c*², which is applied to the periphery of the drum *c*³. The plates or disks *c*⁵ *c*⁶ are formed of larger diameter than the drum *c*³, so as to leave a channel or groove for the reception of the elastic ring *c*². They are, however, of less diameter than the elastic ring *c*², in order to allow of its compression without the disks *c*⁵ *c*⁶ coming in contact with the sash. The axle *c*¹ extends centrally through the drum *c*³, and is provided with a small cylinder or tube, *c*⁹, securely affixed thereto, which serves as a bearing to the axle *c*¹. *c*⁴ is a coiled spring secured to the tube *c*⁹ and axle *c*¹ at one end, while its opposite end is attached to the drum *c*³. *d* is a ratchet-wheel secured to the axle *c*¹ on the outside of, but close up to one of, the plates *b*¹ or *b*², according to which side of the frame *b* it is desired to operate the axle *c*¹. *e* is a spring pawl or catch affixed to the casing *a* at *e*¹, in position so that its end *e*² shall be received within and engage with the notches in the ratchet-wheel *d*, and prevent the unwinding of the spring *c*⁴ by the reverse motion of the axle *c*¹. The upper end of the spring *e* is provided with a small projection or extension, *e*³, which passes outside of the ratchet-wheel *d* in order to secure to the latter a more even and regular movement. *f* is the key for winding up the spring *c*⁴. It is inserted through a suitable mortise or opening *a*¹ in the casing *a*, and fits onto the squared end of the axle *c*¹. In use I employ two of these balances for each sash, and I arrange them in the casing in position so that those for retaining the lower sash shall be near its top, while those for the upper sash shall be near its under side when the sashes are in the position of closed. The balances are so arranged that the spring of the one applied to the right-hand side of the lower sash shall be turned to the right, while that on the left is turned to the left, in order to wind them up. The balances employed for the upper sash are arranged to be wound in the reverse direction to those em-

played for the lower sash. The sashes being placed in position in the casing *a*, the springs of the balances are then wound up sufficiently that they may balance the weight of the sashes when raised.

Having thus described my invention, I would have it understood that I do not claim, broadly, a sash-balance in which a coiled spring, arranged within a revolving casing provided with an external elastic friction ring or surface, is employed to balance the weight of the sash; but

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

In a sash-balance, the combination, with the

frame *b*, projection or extension *e*³, spring-pawl *e*, and ratchet-wheel *d*, of the balance-wheel *c*, having axle *e*¹, tube *e*², plates or disks *e*⁵ *e*⁶, drum *c*³, spring *c*⁴, and retaining-screws *c*⁷, together with an elastic ring, *e*², having recesses *c*⁸, all constructed and operating substantially as described.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

ALEXANDER SMITHERS.

Witnesses:

H. A. SCHELL,

W. G. MONTGOMERY.