(No Model.)

J. LOCH.

SASH BALANCE.

No. 328,324. Patented Oct. 13, 1885.

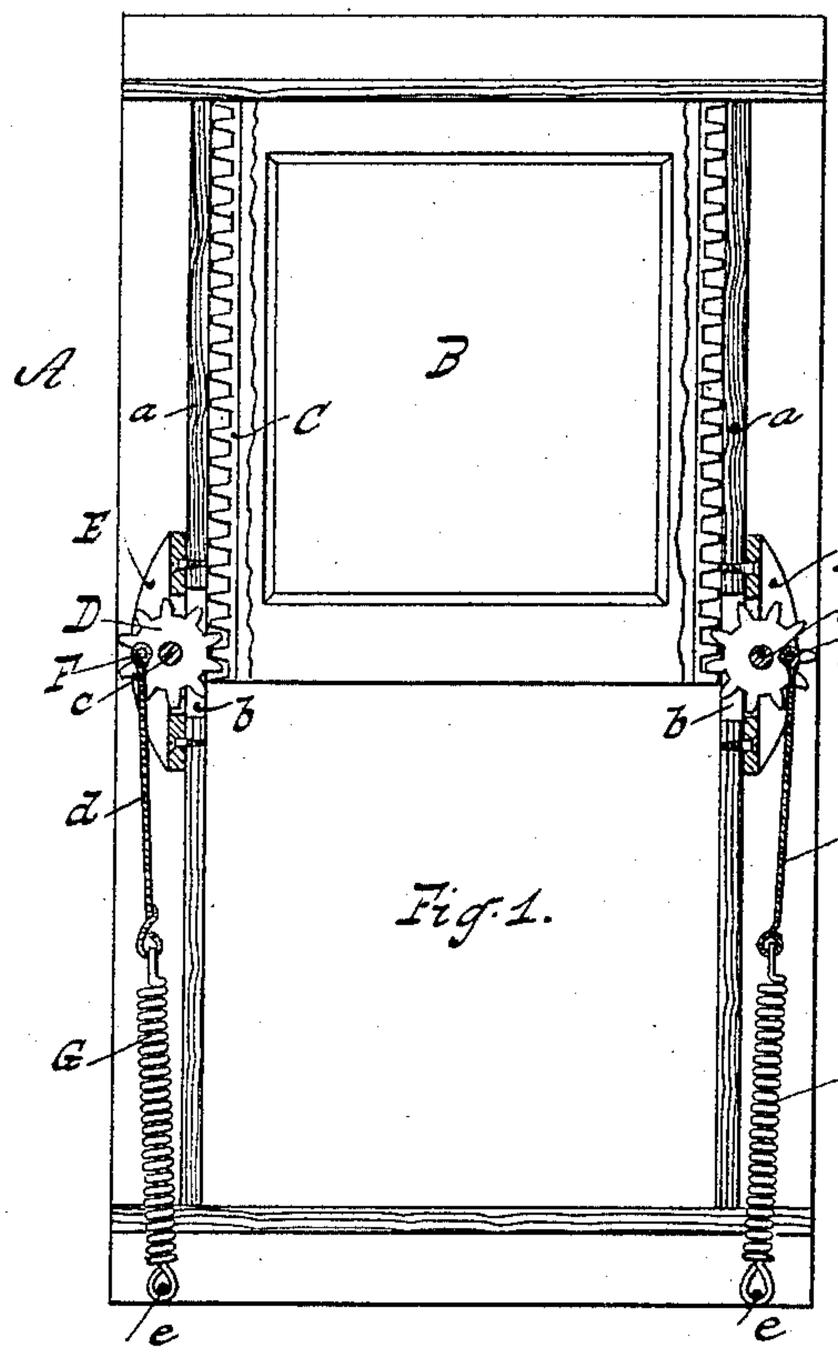

Fig. 1.

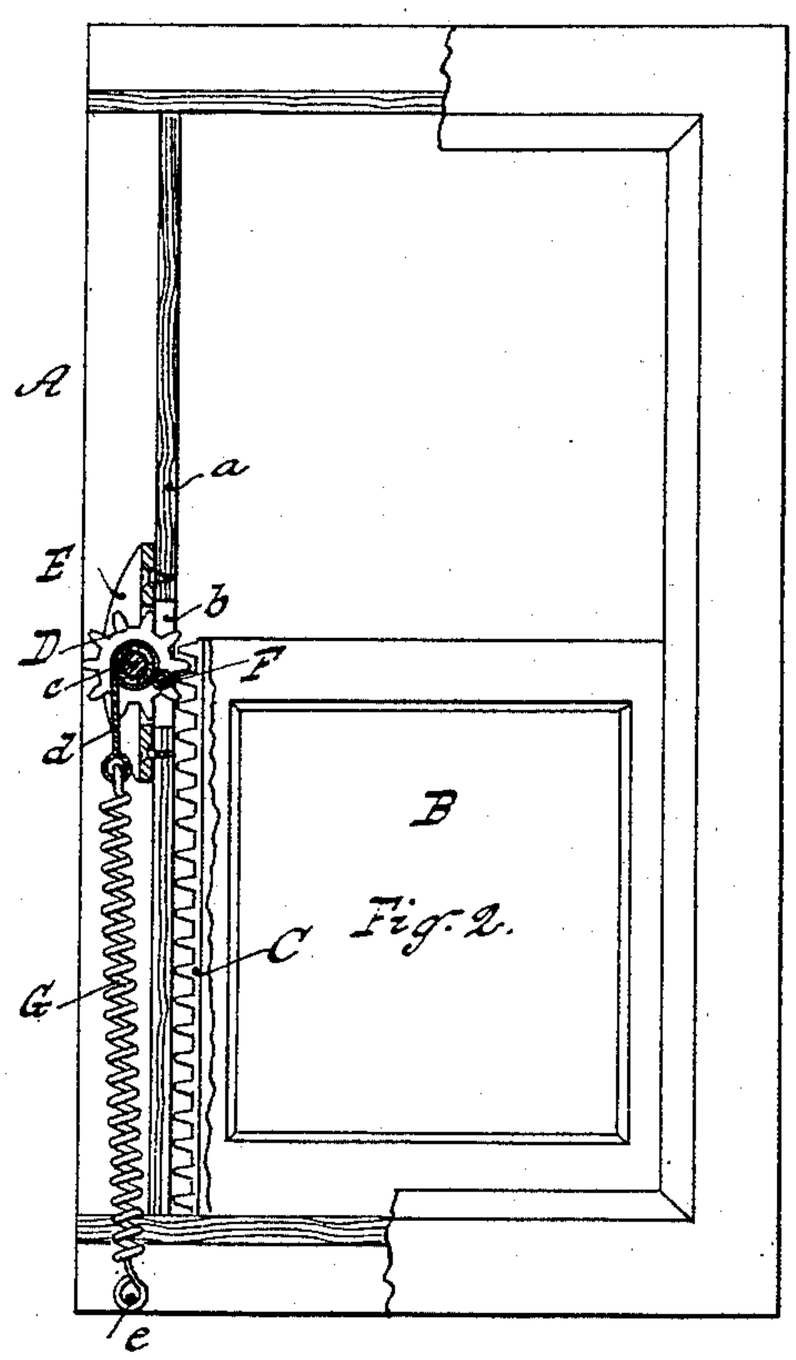

Fig. 2.

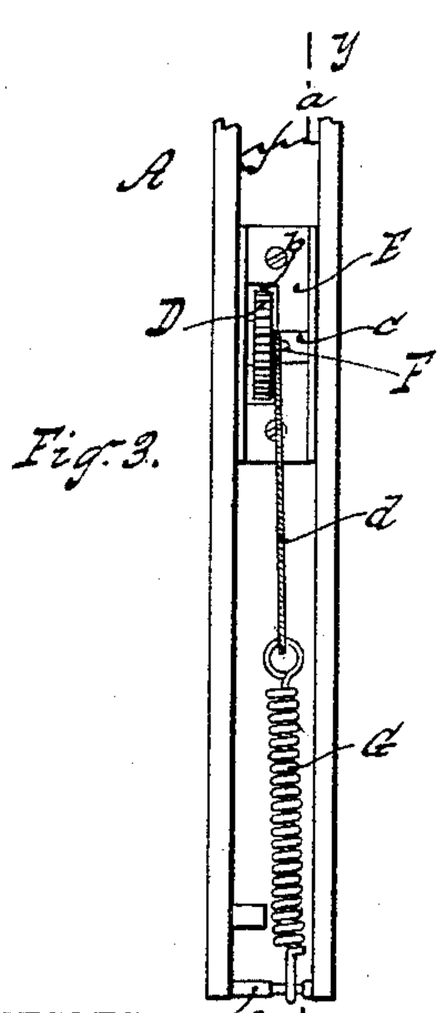

Fig. 3.

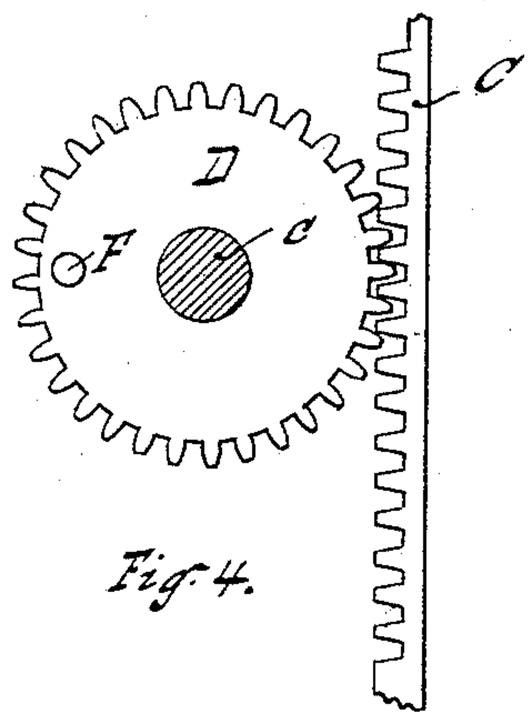

Fig. 4.

WITNESSES:

A. Faber du Faur Jr.

William Miller

INVENTOR

Joseph Loch.

BY Van Santvoord & Hauff

His ATTORNEYS

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH LOCH, OF NEW YORK, N. Y.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 328,324, dated October 13, 1885.

Application filed January 22, 1885. Serial No. 153,643. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LOCH, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Sash-Balances, of which the following is a specification.

My invention relates to improvements in sash-balances; and it consists in the combination, with a window-frame and the sash fitted therein, of two racks secured in the sides of the sash, two cog-wheels mounted in the frame and engaging with the racks, eccentric pins secured in these wheels, two springs hitched at their lower ends to the frame, and ropes or chains connecting the eccentric pins with the upper ends of the springs.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section in the plane *y y*, Fig. 3, with the sash in its normal position. Fig. 2 is a front elevation with part broken away, showing the sash when lowered. Fig. 3 is a side elevation with the sash in its normal position. Fig. 4 is a view on a larger scale of the rack and cog-wheel detached.

Similar letters indicate corresponding parts.

In the drawings, the letter A designates a window-frame of ordinary construction, and B is the upper window-sash, fitted in said frame. The lower sash and the mechanism for controlling the same being precisely similar in detail to the upper sash and its mechanism both the former are omitted in the drawings.

On each of the two sides of the sash B is secured a rack, C, of metal or other suitable material, said racks being so fitted that their teeth do not project beyond the sides of the sashes, so that the wood of the sashes comes into contact with the outer surface of the walls *a* of the frame A. The teeth of these racks C engage with teeth of cog-wheels D, which project through apertures *b*, formed in the walls *a*, and the cog-wheels D are mounted on spindles *c*, having suitable bearings in the metallic boxes E, which are secured to the window-frame. At a distance from the spindles *c* pins F are secured on the surface of the cog-wheels D, and said pins F are connected, by means of ropes or chains *d*, to the upper ends of springs G G, which are hitched to the lower part of the frame by means of rods *e*, secured to the two walls of the frame, or by any other suitable means.

When the sash B (shown in the drawings) is in its normal position, Fig. 1, the parts are so arranged that the ropes or chains *d* are entirely free from the spindles *c*, and pass directly from the pins F, the centers of which are now approximately in a horizontal line with the centers of the spindles *c* to their respective springs G. It is now evident that on beginning to lower the sash the resistance of the springs will act through a leverage equal to the distances between the centers of the pins F and the spindles *c*, and will accordingly offer more resistance than after the ropes or chains have begun to wind on the spindles *c*, Fig. 2, as the leverage will then be considerably decreased, and the sash will remain stationary in any position it may be placed, for although the springs are extended, still the leverage is reduced to such an extent that the increased force exerted by the springs is counterbalanced to a certain degree by the reduction in the leverage.

I am aware that sash-balances have been made in which racks and cog-wheels mounted on spindles or their equivalents were used, and in which the spindles were connected to ropes or chains leading to springs; but none of these are provided with the eccentric pins herein described, whereby the change of leverage is produced, and it is evident that by the said change of leverage the value of the combination is considerably increased.

Heretofore a sash-balance has been composed of a perforated band secured at one edge of the sash, a toothed wheel journaled in the window-frame and engaging the band, a spiral spring secured at its lower end, and a cord connected with the upper end of the spring and passing around a drum on the axle of the toothed wheel. Such, therefore, I do not broadly claim.

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

The combination, substantially as hereinbe-

fore described, with a window-frame and the sash fitted therein, of two racks, C, secured in the sides of the sash, two cog-wheels, D, mounted in the frame and engaging with the racks, pins F, eccentrically mounted on said wheels, two springs, G, hitched at their lower ends to the frame, and ropes or chains *d*, connecting the eccentric pins with the upper ends of the springs.

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

JOSEPH LOCH. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.