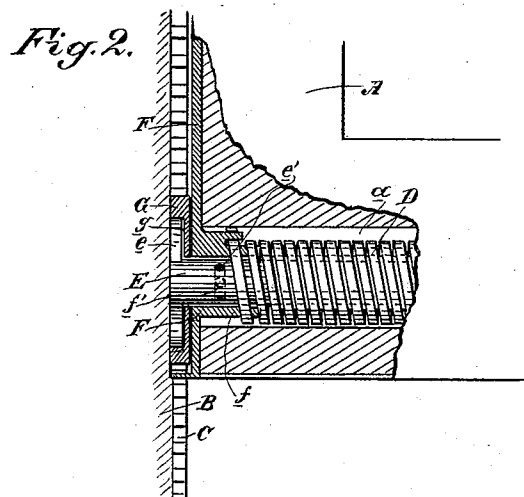
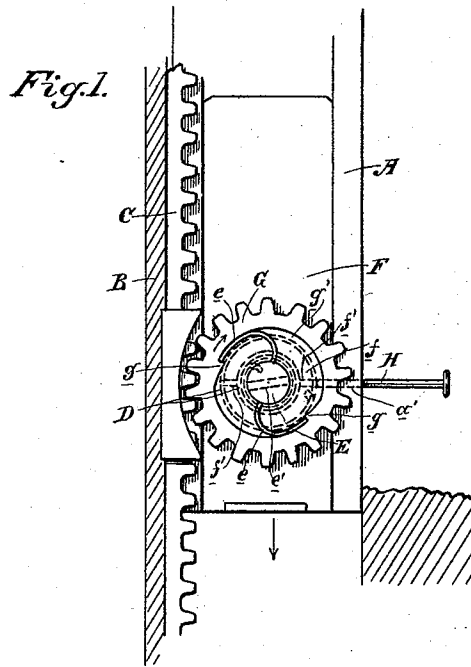


(No Model.)

A. JOHNSON.
SASH BALANCE.

No. 472,887.

Patented Apr. 12, 1892.



Witnesses,
J. H. House
J. F. Osbeck

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UNITED STATES PATENT OFFICE.

AXEL JOHNSON, OF OAKLAND, ASSIGNOR TO THE MARSHALL IMPROVED WINDOW FURNITURE COMPANY, OF SAN FRANCISCO, CALIFORNIA.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 472,887, dated April 12, 1892.

Application filed December 30, 1891. Serial No. 416,596. (No model.)

To all whom it may concern:

Be it known that I, AXEL JOHNSON, a citizen of the United States, residing at Oakland, Alameda county, State of California, have invented an Improvement in Sash-Balances; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of sash-balances in which a spring-actuated pinion and a rack with which it engages are employed.

It consists in the novel arrangement and construction of parts, whereby the spring may be wound up to the required tension by the movement of the sash, as I shall hereinafter fully describe, and specifically point out in the claims.

The object of my invention is to provide simple and effective means for winding up the balancing-spring to the required tension, principally at the time of the initial adjustment of the sash, but also at any time thereafter when it may be needed.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is an end view of my sash-balance. Fig. 2 is a section of same.

A is a window-sash, and B is the window-casing. In the latter is mounted the rack C. In a bore *a* in the sash-rail is located the spring D, of suitable character. It is here shown as a torsional spring. Within this spring is a turn-rod E. The spring is secured at one end to this rod, and at its other end it is secured to a fixed bearing, which is here shown as a sleeve *f*, formed with a bracket F, screwed to the sash. Upon the outer end of the turn-rod is mounted a pinion G. This is journaled upon the rod so that it can turn independently thereof; but it is connected in one direction therewith so as to turn with it by means of a suitable pawl and ratchet. This connection is here shown as consisting of an S-shaped pawl *e*, secured to the rod end and adapted to engage teeth *g*, formed on the periphery of a recess *g'*, made in the pinion-face. The pinion G engages the rack C. In the sash-rail is made a hole *a'*. In the bearing-sleeve *f* is made a hole *f'* in line with hole *a'* in the sash-rail. In the turn-rod E is made a hole *e'*, which is adapted to be brought into line with holes *a'* and *f'*.

H is a pin of any character, which can be passed through holes *a'*, *f'*, and *e'* and be removed therefrom.

The operation is as follows: When the parts are located in the sash and casing and the sash is first fitted to place, there is no tension on spring D. The sash is then drawn down to its bottom limit. In this movement the pinion traveling down on the rack rotates. In this direction its ratchet-teeth engage the pawl of the turn-rod, and said rod is thereby rotated, and the spring is consequently wound up. Now, if the engagement of pinion and turn-rod were permanent, the raising of the sash would simply unwind the spring to its initial condition of no tension; but now I put the pin H through the holes *a'*, *f'*, and *e'*, and I thereby hold the rod from turning and keep the spring wound up. Then I raise the sash, and the pinion rotating in the new direction slips the pawl. When the sash is fully raised, I remove pin H and again pull the sash down, thereby winding up the spring still more. This operation I continue until the spring is under the required tension, and after that the balance is adjusted, so that the sash can be raised and lowered, the spring winding and unwinding between the limits of movement of the sash, but always under sufficient tension to serve as a balance. If it should lose its power to some extent, it can readily be restored by the insertion of pin H and a movement or two of the sash, as described.

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

1. In a sash-balance, the combination of a spring-controlled pinion, a rack with which the pinion engages, a pawl-and-ratchet connection between the pinion and rod, whereby the former is adapted to wind up the latter in one direction and to rotate independently of it in the other direction, and a means for holding said spring under tension while the pinion is rotating independently, substantially as herein described.

2. In a sash-balance, the combination of a turn-rod, a spring secured thereto and adapted to be wound up thereby, a pinion journaled on the turn-rod, a rack with which the pinion engages, a pawl-and-ratchet connection between

the pinion and rod, whereby the former is adapted to turn the rod in one direction and to rotate independently of it in the other direction, and the removable holding-pin for preventing the rod from turning while the pinion is rotating independently, substantially as herein described.

3. In a sash-balance, the combination of the turn-rod, the spring secured thereto and adapted to be wound up thereby, the pinion journaled on the turn-rod and having the recessed face with ratchet-teeth, the pawl carried by the rod and engaging the teeth in one direction and slipping them in the other, the rack engaging the pinion, and a means for holding the rod stationary when the pinion slips its pawl, substantially as herein described.

4. In a sash-balance, the combination of the

turn-rod, the spring secured thereto and adapted to be wound up thereby, the pinion journaled on the turn-rod and having the recessed face with ratchet-teeth, the pawl carried by the rod and engaging the teeth in one direction and slipping them in the other, the rack engaging the pinion, and a means for holding the rod stationary when the pinion slips its pawl, consisting of the removable pin H, seated in the sash and passing through a hole in the rod, substantially as herein described.

In witness whereof I have hereunto set my hand.

AXEL JOHNSON.

Witnesses:

S. H. NOURSE,
H. F. ASCHECK.