(No Model.)

T. G. RUSSELL.

SASH BALANCE.

No. 383,414. Patented May 22, 1888.

Fig. 1.

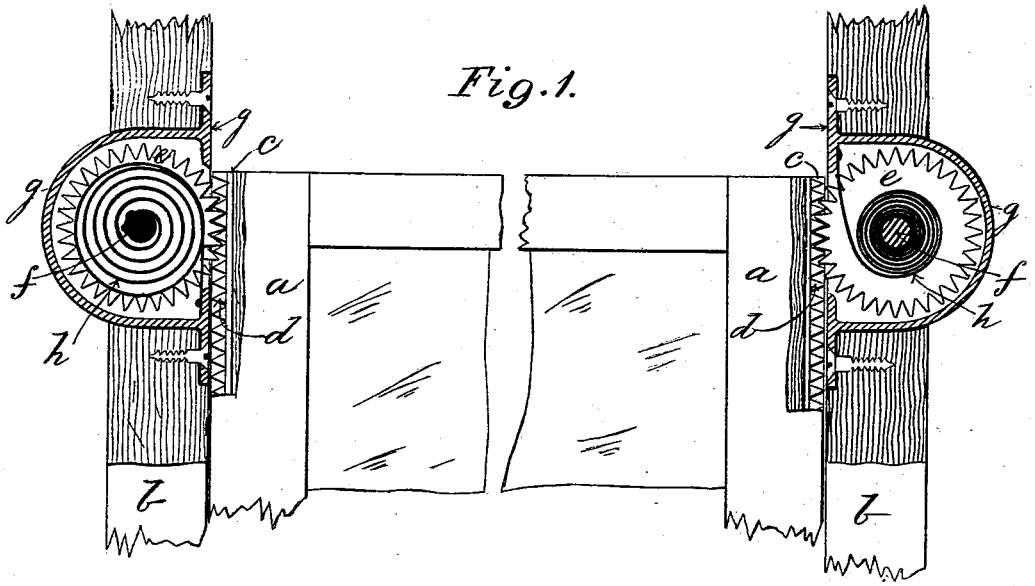
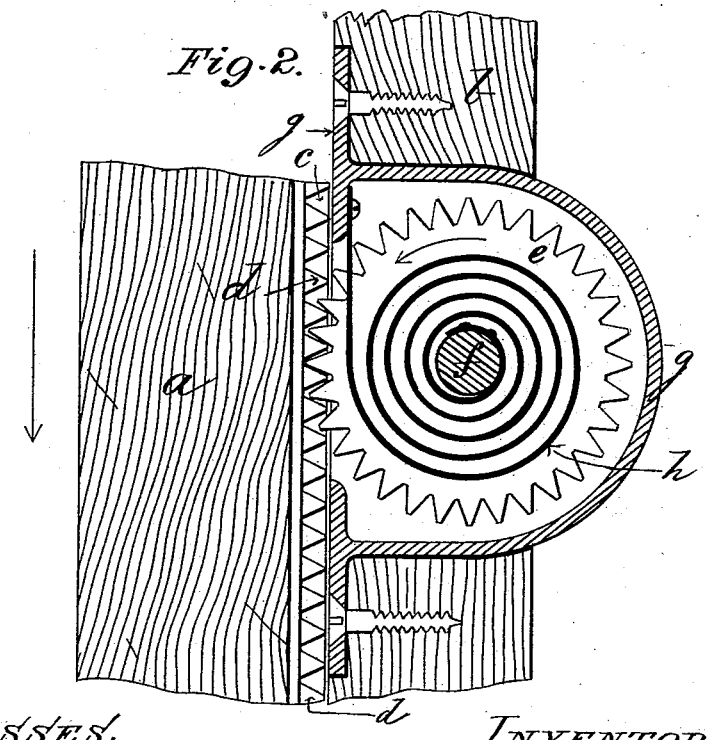


Fig. 2.



WITNESSES.
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W. Byrne

INVENTOR,
Trumbull G. Russell,
by
Paul Bakewell,
his attorney.

UNITED STATES PATENT OFFICE.

TRUMBULL G. RUSSELL, OF ST. LOUIS, MISSOURI.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 383,414, dated May 22, 1888.

Application filed January 3, 1888. Serial No. 259,542. (No model.)

To all whom it may concern:

Be it known that I, TRUMBULL G. RUSSELL, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Sash-Balances, of which the following is a full, clear, and exact description.

My invention relates to an improvement in that class of sash-balances in which spiral springs are used for counterbalancing a window-sash in lieu of weights, and has for its object to overcome the objection hitherto attending the ordinary arrangement of such springs that when lowering the sash, and so coiling or winding up the spring at each side thereof, the tension imparted to the two springs overbalances and causes the sash on being let go to fly back or rise.

My invention consists in arranging the sash-balances so that the spring causing the balance at one side of the sash is coiled or placed in a state of tension and the spring on the other side uncoiled or relaxed while lowering the sash in its frame, and similarly in reverse order when raising the sash.

On the accompanying drawings, Figure 1 is a front sectional elevation, partly broken away, of a window-sash in its lowered position and provided with spring-balances arranged according to my invention; and Fig. 2, a similar view, to an enlarged scale, of the spring-balance shown to the right in Fig. 1 while lowering the sash, like letters of reference denoting like parts in both figures.

a represents a window-sash adjusted in its frame *b*, and formed along each side edge with a groove, *c*, in which is secured a toothed rack, *d*, which is engaged by a toothed spur-wheel, *e*, fixed on its spindle *f*, and mounted therewith within and between the two sides of a box or casing, *g*, which is inserted and secured to the frame *b*, a portion of the toothed wheel *e* projecting through a hole in the front of the box or casing *g*, for engaging with the toothed rack *d*. To the spindle *f*, at the side of the toothed wheel *e*, is secured one end of a spiral spring, *h*, which surrounds the spindle *f*, and is fixed at its other end to the inside of the box or casing *g*.

The two sash-balances, constructed as described, are so arranged that on one side of the sash *a*, or, in the present case, to the right thereof, when the sash *a* is being lowered in its frame *b*, the toothed rack *d* rotates the toothed wheel *e* and its spindle *f*, so that the latter coils or places the spring *h* in a state of tension, while the same movement of the corresponding parts of the balance on the other side of the sash *a* causes its spring *h* to be simultaneously uncoiled or relaxed the same operation effecting a like result in reverse order when raising the sash *a*. By this means a proper equilibrium is always maintained to the weight of the sash *a* and any undue strain thereon avoided.

I claim—

The combination of a window-frame, two spiral springs coiled in opposite directions, each of which is fastened at one end to the window-frame, while its other end is fastened to the spindle of a spur-wheel, one of said springs being placed in tension while the other is relaxed, with a window-sash having a toothed rack, substantially as described, and for the purpose specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 22d day of December, 1887.

TRUMBULL G. RUSSELL.

Witnesses:

S. L. SCHRADER,

PAUL BAKEWELL.