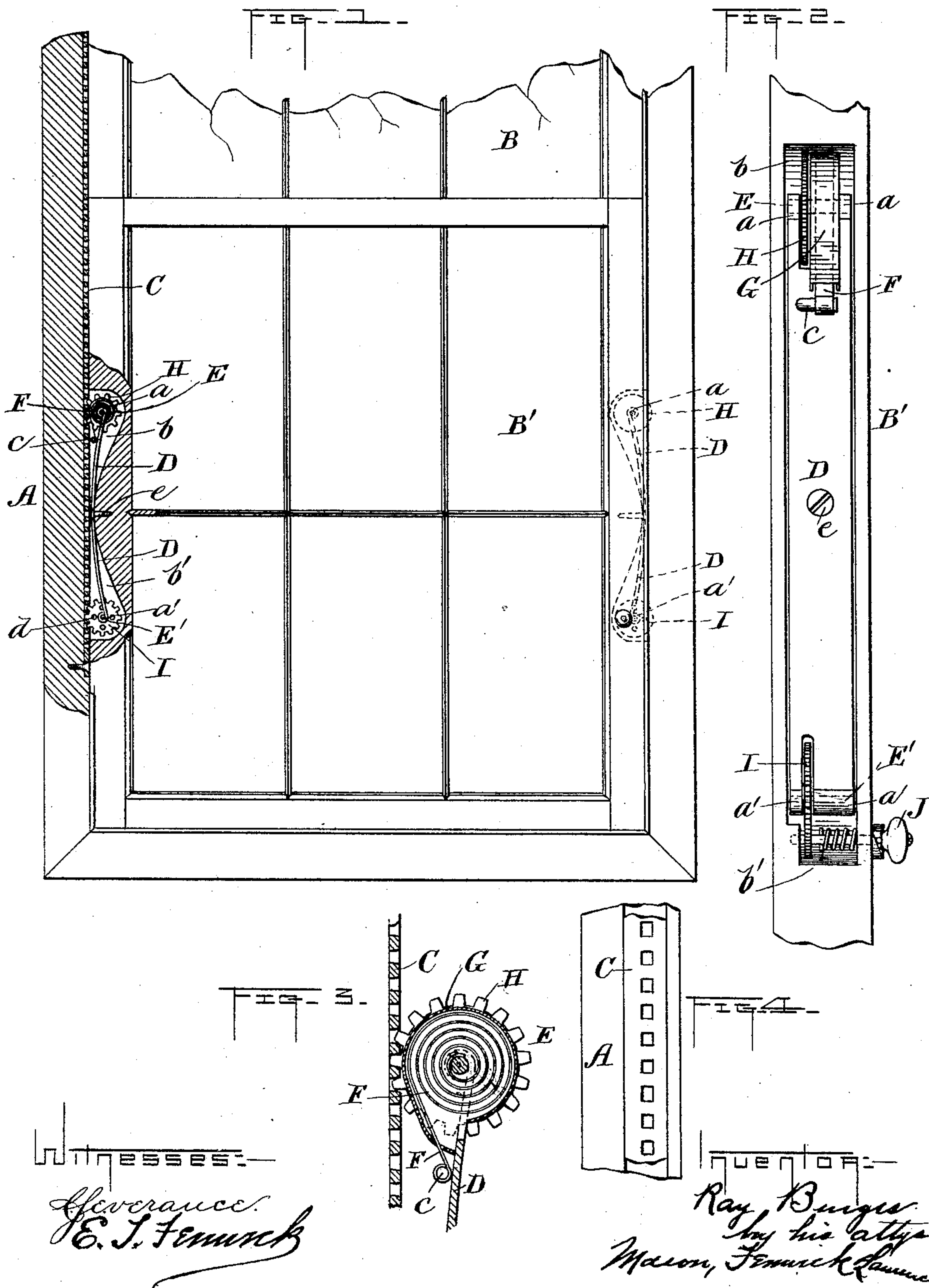


(No Model.)

R. BURGESS.
SASH BALANCE.

No. 452,258.

Patented May 12, 1891.



UNITED STATES PATENT OFFICE.

RAY BURGESS, OF OSWEGO, NEW YORK.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 452,258, dated May 12, 1891.

Application filed February 28, 1891. Serial No. 383,171. (No model.)

To all whom it may concern:

Be it known that I, RAY BURGESS, a citizen of the United States, residing at Oswego, in the county of Oswego and State of New York, have invented certain new and useful Improvements in Spring Balancing Appliances for Window-Sashes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to spring appliances for balancing and assisting in operating window-sashes; and it consists in a scroll or coiled or other equivalent spring, in combination with a toothed wheel and its arbor and a supporting-bar on which the spring and toothed wheel are mounted, the said parts being connected to the sash and the wheel thereof working a rack-bar applied to the frame of the window, as will be hereinafter described.

It also consists in mounting the said parts on a flexible supporting-bar, whereby ease and accommodation in case of bind are secured; and it also consists in the combination of the hereinafter-described spring balancing mechanism and its support, a secondary toothed wheel for steadying the mechanism, and a toothed rack into which the two toothed wheels gear, as will be hereinafter described; and it finally consists in providing a series of stop-holes in the secondary toothed wheel and providing a spring-pin in connection with said wheels with holes and the spring balancing mechanism, whereby the sash can be locked up or down, as occasion may require, the said pin serving also as a permanent night or safety fastening.

In the accompanying drawings, Figure 1 is a front elevation and partial broken section of a window frame and sashes having my invention applied thereto. Fig. 2 is a broken edge view of one of the sashes and my improved spring balancing mechanism on an enlarged scale. Fig. 3 is a detail sectional view showing a portion of the rack and spring balancing mechanism; and Fig. 4 is a broken detail view showing a portion of the window-frame and the rack.

A in the drawings indicates the frame, and B B' the window-sashes.

C is a rack-bar set into the inner edge of the frame A and extending up to the necessary extent to accommodate the up-and-down movement of the lower sash B'.

D is a bent supporting-bar bifurcated at its upper and lower ends and formed with journal or arbor bearings *a a'* at its ends. This bar is fastened, as indicated at *e*, about midway of its length to a recessed portion of the sash B', and its upper and lower ends are allowed to vibrate in recesses *b b'*, provided in the edge of the sash.

E is an arbor or short shaft fitted in the bearings *a a'* and turning freely therein. To this shaft a scroll or coiled spring F is securely fastened by one of its ends and by its other end to a bracket-pin *c* of the bar D, as shown. This spring winds and unwinds by the revolution of the arbor, and it is located between the prongs of the upper bifurcated end of the bar D and may be inclosed within a light housing or casing G, as shown.

H is a primary toothed wheel keyed to the arbor or shaft E on one side of the spring. This wheel and the spring have freedom to vibrate with the upper end of the bar D in the recess *b* formed in the sash. The toothed wheel H is of the diameter which enables it to gear with the rack C with the window-frame, as illustrated.

I is a secondary toothed wheel keyed to an arbor E' and revolving between the prongs of the lower bifurcated end of the bar D. This wheel also gears with the rack C and is free to vibrate with the lower end of the bar in the recess *a'* of the sash. A similar device to the one described may be applied on the other edge of the sash and to the window-frame, and a pair of the devices may be applied on the upper sash, and in each of the secondary wheels a series of stop-holes *d* may be provided, and in coinciding relation to one of said holes of each wheel a spring-locking pin J may be provided on the sash, and by passing said pin into such hole the said wheel will be locked and prevented from turning, and by withdrawing said pin and holding or fastening it back the wheel will be left free to revolve. Any one of the series of holes that may be in coincidence with the pin can be used for this purpose.

From the foregoing description it will be seen that when the sash is raised the primary toothed wheels will gear into the rack and be caused to revolve, and thereby unwind the springs which have been previously wound to their full tension, such winding having been accomplished by the lowering of the sash to the sill and the gearing of the said toothed wheels with the racks during the lowering operation. Now by lowering the sash the toothed wheels are revolved by the toothed racks and the springs again wound to their proper operating capacity or tension, and thus power is secured in the springs, which will assist the operator in raising the sash. During the revolutions of the primary wheels the secondary wheels gear into the racks, and thus the sash is kept in a more perfect balance and from binding. If it is desired to lock the sash in a raised position at any intermediate point, the spring-pins J are entered into one or the other of the locking-holes of the secondary wheels, and the sash thereby held in such position.

I contemplate as a modification of my invention making the supporting-bars straight instead of bowed; but with such construction they would not have as good a spring action and the recesses in the sashes for their reception would have to be deeper. Hence it is preferable to make the bars of the bowed-spring form shown. I also contemplate modi-

fying the form of the spring or using any other suitable spring at the end of the supporting-bar; but the form shown is preferable.

What I claim as my invention is—

1. The combination, with a window-sash, of a spring supporting-bar having a short shaft or arbor journaled in its upper end, a scroll or coiled or other suitable spring fastened by one of its ends to said arbor and by its other end to the supporting-bar, and a toothed wheel secured to said arbor, substantially as described.

2. The combination, with the supporting-bar, the arbor, the scroll or coiled or other suitable spring, toothed wheel, and rack-bar, of the secondary toothed wheel at the lower end of the supporting-bar, substantially as described.

3. The combination, with the spring balancing device described, consisting of a spring supporting-bar, a short shaft or arbor, a scroll or coiled or other suitable spring, and two wheels, of the spring locking-pin adapted for entering locking-holes in the secondary wheel, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

RAY BURGESS.

Witnesses:

E. T. FENWICK,

C. SEVERANCE.