

GEORGE E. SMITH.

Improvement in Sash Balances.

No. 120,543.

Patented Oct. 31, 1871.

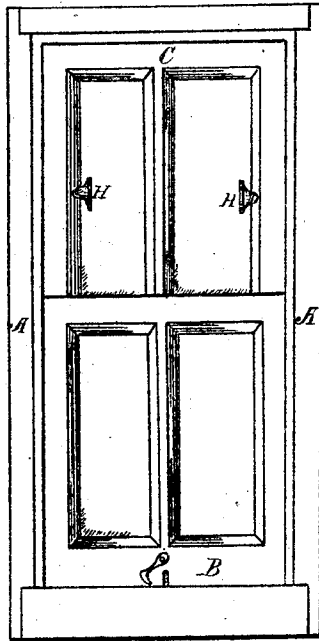


Figure 1.

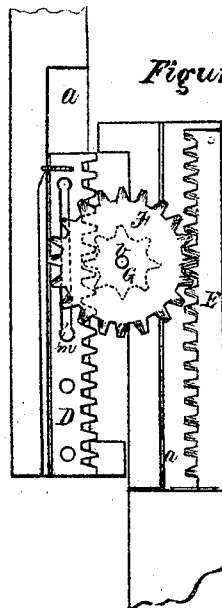


Figure 2.

Figure 3.

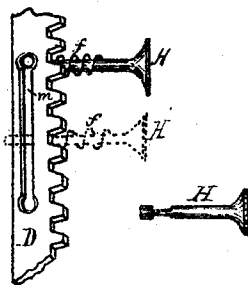
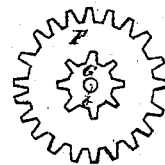


Figure 4.



Witnesses:

Parker H. Sweet, Jr.
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Inventor:

George E. Smith.
By his Attorney,
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UNITED STATES PATENT OFFICE.

GEORGE E. SMITH, OF FITCHBURG, MASSACHUSETTS.

IMPROVEMENT IN SASH-BALANCES.

Specification forming part of Letters Patent No. 120,543, dated October 31, 1871.

To all whom it may concern:

Be it known that I, GEORGE E. SMITH, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Raising and Lowering Window Sashes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a front view of a jamb of a window with the top and bottom sash in position, showing the improved locking-bolt. Fig. 2 is a side view of the frames removed from the jamb, showing the racks and gear-wheel attached thereto. Fig. 3 is a detached view of the slotted rack, engaging-pin, and its reacting spring. Fig. 4 is a detached view of the gear-wheel and pinion.

Like letters of reference indicate corresponding parts in each figure.

This invention relates to an improvement in the manner of raising and lowering, either separately or combined, one or both of the sashes, arranged within the jamb of a window, so that as the lower sash is raised it will travel much faster and over a greater distance, and form a larger opening than the top sash; and to this end the invention consists in arranging upon the edges of each sash, next to the inside portion of the jamb, a rack or bar formed with teeth, in such a manner that the teeth of the lower sash will engage with the teeth of a spur-wheel journaled upon the inside of the jamb, while the racks of the upper sash engage with pinions arranged upon the sides of the spur-wheels. The invention further consists in forming longitudinal slots in the racks attached to the sides of the top sash, within which operate spring-bolts, so that the sash may be either retained stationary or allowed to move up and down on the movement of the lower sash.

To enable others to more fully understand the construction and operation of the devices they will now be more fully described in detail.

In the accompanying drawing, A designates the jamb of the window; B the lower and C the upper sash; all of which may be of any suitable form or construction. The inside portions of the top sash next to the jambs of the window is cut away so as to form spaces *a*. Within their spaces or recesses are arranged metallic racks D, pro-

vided with longitudinal slots *m* and held in place by the ends of bolts passing through the slots, and headed or otherwise formed to prevent the withdrawal of the same, the opposite ends of these bolts being provided with knobs, by which to operate them, as described hereafter. E E represent racks attached to the lower sashes, similar to the ones upon the upper sash, except that they are rigidly secured to the sash. At or about the point *b* upon the inside of the jambs A are journaled large spur-wheels F F, carrying pinions G G upon their sides in such a manner that the larger wheels engage with the teeth of the racks E E of the lower sash, while the smaller wheels or pinions engage with the teeth of the racks D D upon the upper sash C, so that when the sash B is raised the racks engage with the wheels F F, they being of a larger diameter than the pinions G G; consequently, the sash B will be caused to travel more rapidly than the sash C; hence the former sash will leave or form a larger open space than the upper sash. The bolts H H extend from the outside of the upper sash through the same and through the racks D D where they are headed or otherwise formed to prevent their withdrawal.

When it is desired to raise the lower sash, without lowering the upper sash, the bolts H H are depressed, which will throw the head of the bolt out from the circular opening in the ends of the slots, and thus allow the racks to be operated without moving the sash itself. The bolts H H are provided with reacting springs *f* *f*, which tend to throw the heads of the bolts back against the edges of the slots, and thus allow the racks to have a free movement either up or down until the heads *g* coincide with the circular openings in the ends of the slots. When this occurs they hold the racks firmly, and the sash can be raised or lowered by operating the lower sash.

h h are small staples, which serve to hold the racks D D firmly against the sash C, so that the springs *f f* cannot force the same out against the jamb.

It will be seen that the racks and wheels may be arranged on one side of the sashes and jamb only and perform the same functions as two sets; but I prefer the latter as being more efficient.

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

1. The sashes B C, provided with the racks D E, in combination with the large spur-wheel F and the pinion G, constructed and operated substantially as and for the purpose described.

2. The locking-bolt H, slotted rack D, and

pinion G, in combination with the large wheel F and rack E, substantially as described.

To the above I have signed my name this 31st day of July, 1871.

GEORGE E. SMITH.

Witnesses:

NATHL. WOOD,
SAMUEL L. GRAVES.

(24)