(No Model.) 2 Sheets—Sheet 1.

W. BERRY.

SASH BALANCE.

No. 456,716. Patented July 28, 1891.

Fig. 2.

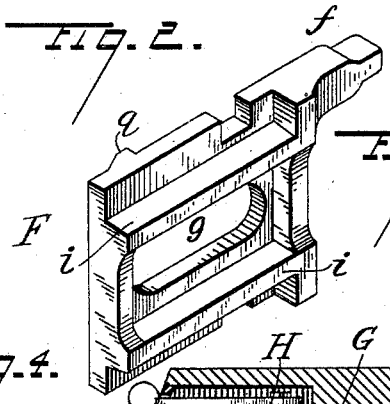


Fig. 4.

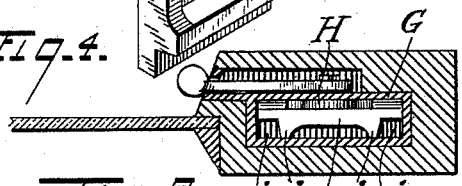


Fig. 3.

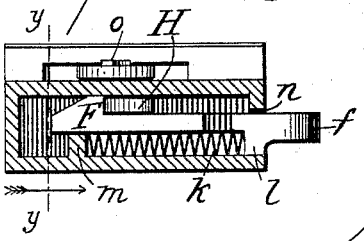


Fig. 1.

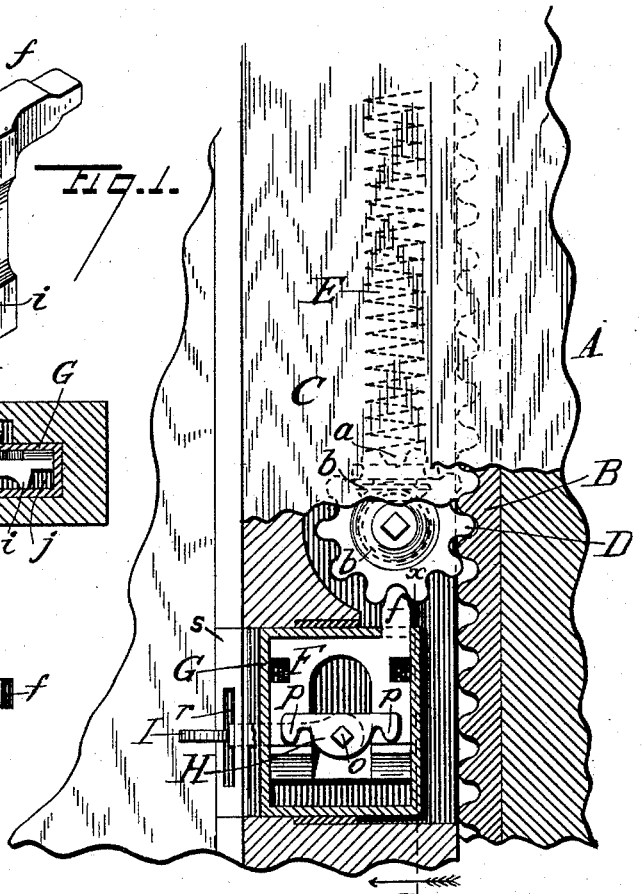


Fig. 5.

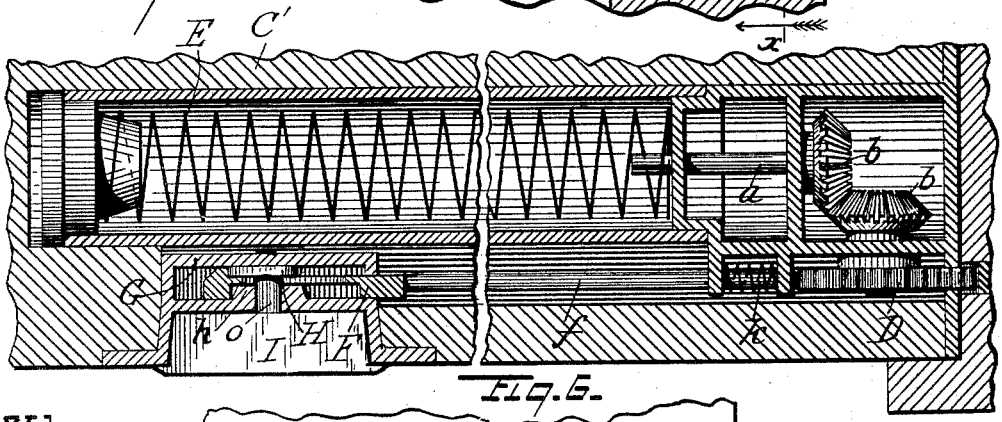
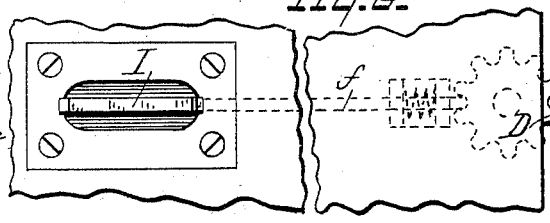


Fig. 6.



Witnesses

A. S. Paré

Lee S. Langhorne

Inventor

Washington Berry

by Spear & Seely

Attorneys

(No Model.) 2 Sheets—Sheet 2.

W. BERRY.

SASH BALANCE.

No. 456,716. Patented July 28, 1891.

Fig. 7.

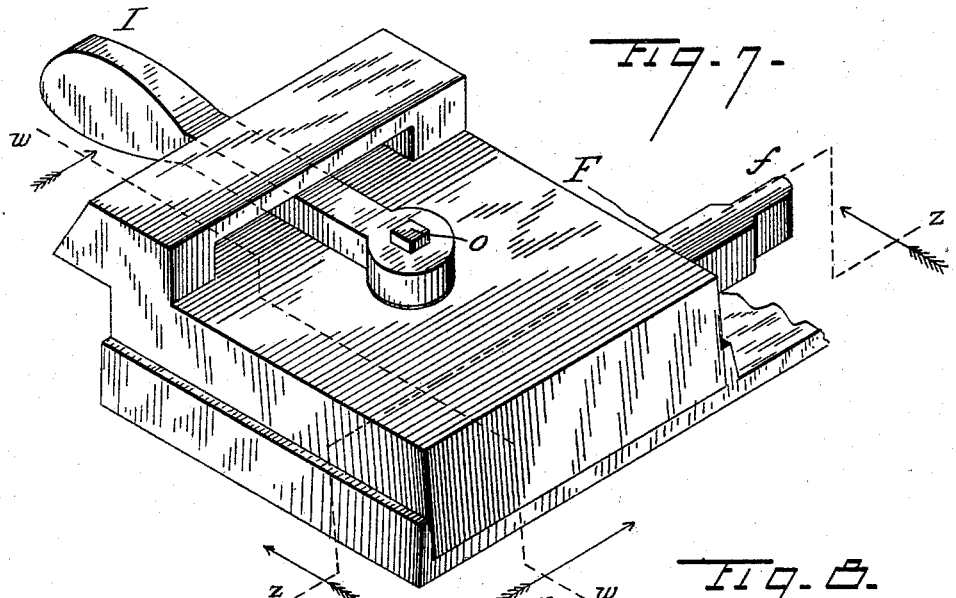


Fig. 8.

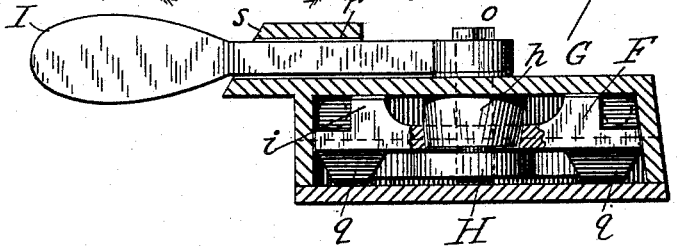
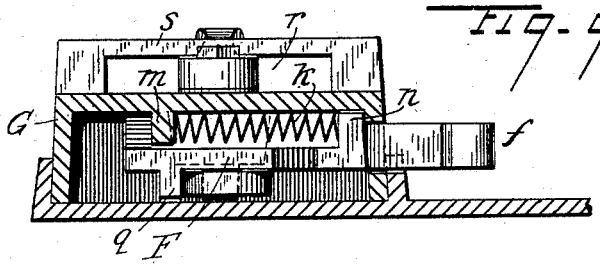


Fig. 9.



Witnesses

C. S. Pare

Jas. P. Langhorne

Inventor

Washington Berry

by Spear & Seely

Attorneys

UNITED STATES PATENT OFFICE.

WASHINGTON BERRY, OF ANGEL ISLAND, CALIFORNIA.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 456,716, dated July 28, 1891.

Application filed December 23, 1890. Serial No. 375,581. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON BERRY, a citizen of the United States, and a resident of Angel Island, Marin county, California, have invented certain new and useful Improvements in Sash-Locks; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to devices for locking window-sashes; but more particularly to locks for that class of windows which have a rack-and-pinion movement in their guides and are balanced by a torsional spring contained within the sash-rail and connected to the pinion in such a manner as to exert a stored-up torsional force upon such pinion while the window is being raised.

My device is self-locking in character or normally in engagement with the pinion, and it is adapted with slight modification in structure to both the upper and lower sashes of spring-balanced windows. I have therefore described it hereinafter and shown it in the accompanying drawings as applied to both sashes, and shall now proceed to point out more particularly its construction and mode of operation in connection with those drawings, in which—

Figure 1 is an elevation of a part of the upper sash of a window and its casing sufficiently broken away to show my sash-lock in position. Fig. 2 is a perspective view of the sliding plate which carries the locking-bolt. Fig. 3 is a section on the line *x x* of Fig. 1. Fig. 4 is a horizontal section on the line *y y* of Fig. 3. Fig. 5 is a longitudinal horizontal section of the lower sash-rail to illustrate the application of my lock to that situation. Fig. 6 is a detail elevation of a part of the lower sash-rail with the locking-bolt shown in dotted lines. Fig. 7 is a perspective view of a modification. Fig. 8 is a section of same on line *w w*. Fig. 9 is a section of same on line *z z*.

A represents the casing of a window, and B a vertical rack situated in the sash-run.

C is the upper sash of the window, sliding in the run, with its edge in proximity to the rack, and carrying a spur-pinion D, journaled in a rabbeted groove formed in the edge of the sash and engaging with the rack B.

E is a torsion-spring within the groove, fixed at one end and connected at the other to a rotary rod *a*, which transmits motion through the beveled pinions *b b* to the spur-pinion D. The spring and its connections are sufficiently indicated by dotted lines, as their construction will be readily understood, and in addition they are more fully shown in Fig. 5 in connection with the lower sash, where their operation is precisely similar. The object of employing beveled pinions intermediate between the spring and pinion is fully stated in a previous application of mine filed October 10, 1890, and serially numbered 367,685.

The sash-lock, which operates in connection with the pinion D, is a sliding plate F, having at one end a projecting rod or bolt *f*, which enters between two teeth of the pinion, and thus prevents its revolution and the consequent movement of the sash. This plate slides within a box or casing G, secured within the sash-rail, being guided in its movement by a slot *g* and stud *h*. Its shape is fully shown in Fig. 2, one side being smooth and flat, while the other is provided with ribs *i i*, upon which it slides in its case, and which produce side recesses *j j* to contain coiled pressure-springs *k k*, which are thus inclosed between the plate and its casing and bear at one end upon the shoulder *l* of the plate and at the other upon a lug *m* on the casing. These springs force the sliding plate and its bolt toward the pinion and cause the bolt to project through a hole *n* in its case and to engage with the pinion, as before stated. The movement of the plate is effected by a double cam H, mounted upon a pin *o*, pivoted in the casing, the ends *p p* of which bear upon studs *q q* on the plate. Turning the cam in either direction will therefore slide the plate and withdraw the bolt from the pinion. The handle which operates the cam is mounted upon one end of the pin *o* and projects through a slot *r*, formed in a projecting shoulder *s* of the case, the latter being so placed that the inclined face of its shoulder *s* shall be flush with the inner beveled part of the sash-rail adjacent to the glass. Movement of the handle in either direction will, as before said, release the bolt from the pinion, and by moving said handle far enough to

bear upon either end of the slot *r* it becomes a sash-moving handle for raising or lowering the sash.

The devices shown in Figs. 7, 8, and 9 differ only slightly in construction from those just described, but form a somewhat cheaper device as well as one more easily put together and fitted to the window. The difference consists, as shown in Figs. 8 and 9, (which are the same sections as Figs. 3 and 4,) in reversing the plate F, so that the relative positions of the cam H and springs *k* are reversed also—that is, the cam is placed on the extreme end of pin *o*, instead of immediately next the operating-handle, as in Figs. 3 and 4, and the springs are of course upon the side of the plate opposite the cam. The practical operation of the device is precisely the same as before described.

The device as applied to the lower sash operates, as before stated, upon the same principle as that just described; but some modifications are necessary to adapt it to its different situations. I prefer to use the operating-handle in connection with a cup-escutcheon at or near the middle of the sash-rail, as indicated in Figs. 5 and 6, so that it is in the most favorable position for lifting the sash, as well as releasing the lock. These two figures represent a torsion-spring sash-balance, the spring being contained in a bore in the sash-rail and exerting its torsional force through the rod *a* and bevel-pinions *b b* upon the spur-pinion D, which engages with the rack in the sash-run. The case G, which may be connected to the cup-escutcheon, extends into the bore of the sash-rail and contains a sliding plate F, like that described. The end of this plate projects through a hole in the box and carries the locking-bolt *f*, which in this situation is of course long enough to extend from the middle of the sash-rail to the pinion. The springs *k* (shown in Fig. 3) may be used in connection with this form of device; but I have here shown a single spring coiled on the bolt *f* between two shoulders of the casting which supports the gearing, and which shoulders also form guides for the sliding bolt. The two-armed cam H and the pin *o* are in the same relation to the sliding plate F, as previously described, and are controlled by the handle I in the same manner, the turning of the handle in either direction causing the disengagement of the locking-bolt from the pinion.

Although I have for convenience of illustration shown an ordinary spiral spring for producing torsional force to operate as a sash-balance, I prefer to use the double returning-spring described in my application for patent filed November 6, 1890, Serial No. 370,580.

The particular advantages of the devices herein described lie in the fact that they are self-locking, and hence require no such attention as must be given to fasteners on the meeting-rails of sashes. At the same time when employed in a balanced sash it is evident that the lock may be released and the sash raised with a single hand, it being only necessary to turn the handle in either direction and then apply to it what little lifting power these balanced sashes require.

I desire it to be understood that I do not claim herein the devices shown and described, but not made the subject of claims, as such devices are claimed in a pending application.

What I claim is—

1. In a sash-lock, the combination, with a window-casing and the rack-and-pinion movement, of a sliding locking-bolt normally in engagement with said pinion, a cam pivotally supported and having an arm extending on each side of its pivot and bearing against suitable surfaces or lugs in connection with the sliding bolt, and a handle for turning the cam and causing either one or the other of the arms to retract the bolt by turning the handle in either direction from its normal position, substantially as described.

2. The combination of a window frame and sash having a rack-and-pinion connection acted upon by a torsional spring, a box or case within the sash-rail, a plate sliding in such case and having a locking-bolt, springs between the case and plate for pressing said bolt into engagement with the pinion, a two-armed cam bearing upon the sliding plate and adapted when turned in either direction to disengage the locking-bolt from said pinion, and an operating-handle for said cam projecting from the sash-rail, substantially as set forth.

In testimony whereof I have hereunto affixed my signature, in the presence of two witnesses, this 17th day of September, 1890.

WASHINGTON BERRY.

Witnesses:
S. W. SEELY,
H. P. TRICOU.