(No Model.)

R. B. HUGUNIN.

ROLLER SASH BALANCE.

No. 552,761. Patented Jan. 7, 1896.

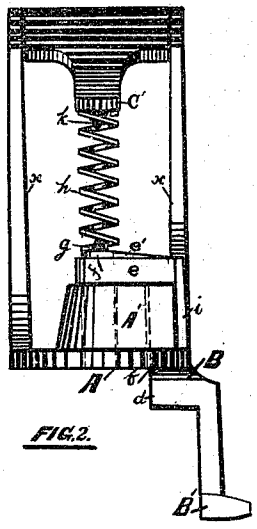


FIG. 2.

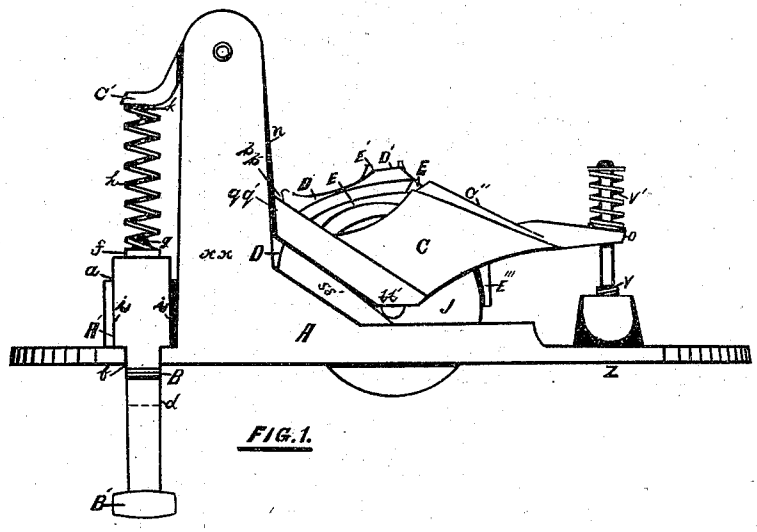


FIG. 1.

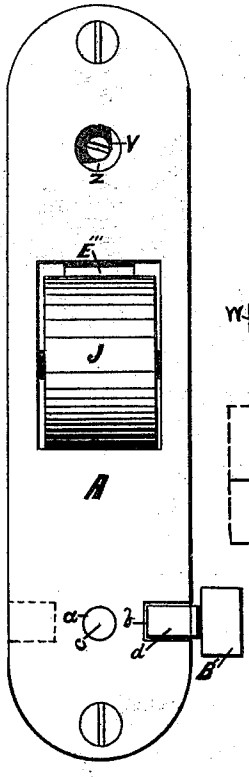
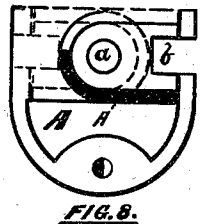


FIG. 3.



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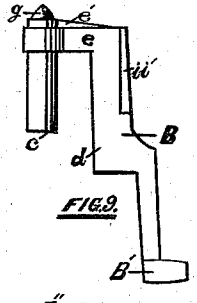

FIG. 9.

FIG. 10.

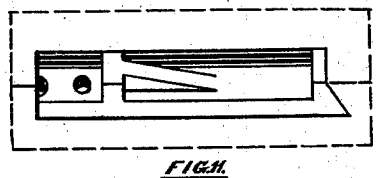

FIG. 11.

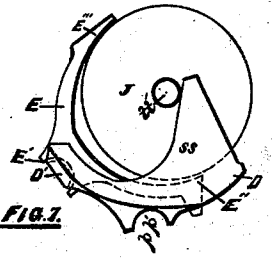

FIG. 7.

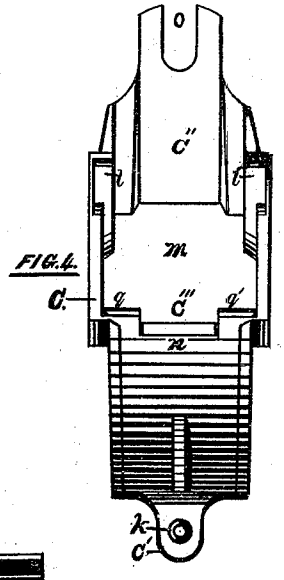

FIG. 4.

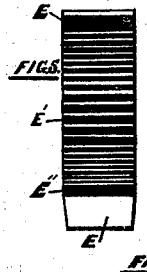

FIG. 5.

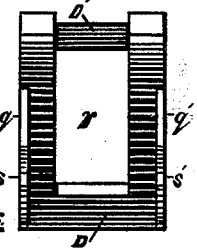

FIG. 6.

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ROBERT B. HUGUNIN, OF HARTFORD, CONNECTICUT.

ROLLER SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 552,761, dated January 7, 1896.

Application filed September 27, 1895. Serial No. 563,883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. HUGUNIN, a citizen of the United States, residing at Hartford, county of Hartford, and State of Connecticut, have invented a new and useful Roller Sash-Balance, of which the following is a specification.

My invention relates to improvements in roller sash-balances in which a roller is confined in a roller-axle-supporting device pivoted to a lever and operated in conjunction with a face-plate.

The objects of the improvements are, first, to do away with a roller friction-surface heretofore forming an essential part of a roller-axle-supporting device pivoted to and working with a lever, and with it the inseparable friction from the necessary constant contact of the roller with this surface while revolving on raising the sash, and, second, by means of a lever-brake E cause the weight of the sash carried through the roller to the lever end E″ of the lever-brake pivoted to and working with the axle-supporting device to press the brake and E‴ of the lever-brake against the roller, holding the latter from turning while supporting the sash. (See Figs. 1 and 7.)

My invention further relates to improvements in roller sash-balances in which a roller carried by a lever is operated in conjunction with a face-plate.

The objects of the improvements are, first, to unite in a roller sash-balance a sash-lock, with facilities for self-locking the sash when closed, and, second, for locking the sash when open for ventilation, and with which the sash is closed and self-locked without handling the lock. I attain these objects through the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation plan view, showing the features and application of my invention—to wit, the lever-brake holder D, the lever-brake E, the lock-spring-holding projection C′ on lever C, the back depression C″ on lever C, spring-seat *k* on projection C′, the lock-spring *h*, the lock-spring-seat *g* on locking-lever B, lock-handle B′ and lock-lever-supporting projection A′ on face-plate A, the brake end E‴ of lever-brake E, fulcrum-bearings D′ E′ on lever-brake holder D′, and lever-brake E. Fig. 2 is a rear end elevation view of Fig. 1, showing locking parts. Fig. 3 is a front plan view of Fig. 1. Fig. 4 is an inner plan view of lever C with working parts removed and shown in Figs. 5, 6, and 7. C′ is a lock-spring projection; *k*, lock-spring-seat; C″, rear depression; C‴, opening in neck *n*, both the latter to make room for the lever-brake E; *q q′*, bearings for lever-brake holder D; *l l′*, inclined roller-axle bearings; *o*, opening for the spring-pressure adjusting-screw V; M, opening for the roller and working parts used with same. Fig. 5 is an inner side plan view of lever-brake holder D; *r*, opening for lever-brake E; D′, fulcrum-bearing for lever-brake E; *s s′*, roller-axle-supporting arms; *p p′*, bearings for pivoting on bearings *q q′* on lever C. Fig. 6 is an inner side plan view of lever-brake E, showing the lever and brake ends E″ E‴. Fig. 7 is a side plan view of lever-brake holder D, lever-brake E, and roller J, assembled as in use for application to lever C; *p p′*, bearings on lever-brake holder D, which rest on bearings *q q′* on lever C; D′ E′, fulcrum-bearings connecting lever-brake holder D and lever-brake E; *s s′*, roller-axle-supporting arms; E″ E‴, lever and brake ends of lever-brake E. Fig. 8 is a rear plan view of a section of plate A, showing the lock-supporting projection A′ and openings *a b* in same for arms *c d* on locking-lever B. Fig. 9 is a plan view of locking-lever B, showing guide-arm *c*, locking-tongue arm *d*, connecting-bar *e*, spring-arm *f*, spring-seat *g*, flanges *i i′* and *e′*, and lock-handle B′. Fig. 10 is a perspective view of sash-lock-engaging plate F, showing notch F′ for locking the sash when shut; F″, for locking the sash when open for ventilation; F‴, an incline with which the tongue of the lock is pressed back in closing the sash; W, the closed locking end of plate; W′, the ventilating locking end of plate. Fig. 11 is a perspective view showing the sash-lock-engaging plate F applied to the edge of the sash.

A is a face-plate. A′ is a lock-holding projection on plate A; *a*, an opening in same for the admission and working of guide-arm *c*; *b*, an opening in same for the locking-tongue arm *d* of locking-lever B. The opening *a* is made to conform to the guiding-arm *c*, and is of sufficient width and depth to allow for the back and forth movements of the locking-tongue *d* beyond the face-line of the plate A.

The opening *b* extends inward from the side edge of the plate A and is of sufficient width and depth for the working and support of the tongue *d*.

B is a locking-lever. *c d* are guiding and locking arms of same united by cross-bar *e*.

f is a spring-arm having a spring-seat *g* for the lock-spring *h*; *i i'*, strengthening-flanges on tongue *d*.

B' is the handle of the locking-lever, by means of which and the spring *h* the locking-tongue *d* is worked back and forth from the front line of the plate A by alternate pressure from the hand and spring, engaging and disengaging locking-contact with the sash.

e' is a strengthening-flange from bar *e* to spring-arm *f*.

C is a lever having an opening *m* to receive the roller and working parts connected therewith, a neck *n* for hinging lever to lugs *x x'* on plate A, opening O for the adjusting-screw V, lock-spring projection C', seat *k* on same for lock-spring *h* interposed between seat *k* and seat *g* on spring-arm *f* of locking-lever B, C'' depression, C''' opening on neck *n*, both for lever-brake E, bearings *q q'* for bearings *p p'* on lever-brake holder D, *l l'* inclined roller-axle bearings.

D is a lever-brake holder having preferably an opening *r*, D' fulcrum bearing for lever-brake E, *p p'* bearings which rest on bearings *q q'* on lever C, *s s'* roller-axle-supporting arms which furnish in connection with the inclined axle-bearings *l l'* on lever C elongated holding and rolling bearings for the roller-axles *t t'*. The elongated bearings furnish room for the free working of the roller on the axles should any ordinary variations occur from the casting of the working parts.

E is a lever-brake having a fulcrum-bearing E' resting on fulcrum-bearing D' on lever-brake holder D.

E'' is the lever end upon which the roller J rests when carrying the weight of the sash in holding same, causing the opposite or brake end E''' to press upon the upper side of the roller, holding same from turning while supporting and lowering the sash. On raising the sash, the weight and consequent brake-pressure is removed from the roller, enabling the latter to revolve freely and the sash to be easily raised, which was not the case when a friction-surface was employed against which the roller was constantly held to maintain the constant contact, which was an indispensable necessity; otherwise the roller would lift from this surface on raising the sash and sag back to the same with the sash after raising. With the lever-brake E in connection with lever-brake holder D, friction occurs only while supporting the sash.

J is a roller having a metal axle and a body of rubber, wood, fiber, metal, cement, or unglazed china.

F is a sash-lock-engaging plate having two sash-locking notches F' F''—F' for locking the sash when shut, F'' for locking the sash when open for ventilation; F''', an incline extending from the plate to the top of notch F', by means of which the tongue of the lock is pressed back and the sash closed and locked without handling the lock; W', beveled and grooved end; W, rounded and grooved end of plate F. By means of this construction of the ends of the plate, a corresponding mortise having been made on the edge of the sash, the plate is driven in and held without other fastening, the grooves and bevels causing the wood to hold the plate secure. To guard against making the mortise too large for the plate, facilities for securing with a screw are provided in the plate.

V is an adjusting-screw carrying a pressure-spring V', by means of which the pressure of the lever on the roller-axles through their bearings onto the roller and against the sash is regulated to the weight of the sash after the balances are applied to the frame, the balances being placed in the frame to enable the reaching of their adjusting-screws by lowering the top of the sash to them.

The balances are applied to the frame in pairs, one on each side of each sash, opposite each other, one with and one without the sash-lock. Similar mortises are required for both, the one with the lock requiring a small notch, cut in the sash-stop for the admission and working of the stem of the lock-handle B'. One sash-lock-engaging plate is used for each sash, applied to the edge of the sash opposite the tongue of the lock, on the balance, when the sash is closed. As the two sash open and close in opposite directions, the lower sash opening upward and the upper sash downward, the plates are reversed in applying, the closed locking-notch F' being the lower end on the upper sash and the upper end on the lower sash. The plates when properly applied to the sash enable the tongues of the locks to drop into locking position with notch F' when the sash is closed. By pressing the lock-handle B' the tongue of the lock yields back from contact with the notch, and the sash is opened. No handling of the lock is required in closing and locking the sash after opening.

What I claim as my invention is—

1. In a roller sash balance, the combination of face plate A, roller lever C, and roller J, with lever brake holder D, having a pivoting bearing D', and lever brake E, having a pivoting bearing E', and means for yieldingly adjusting the pressure of the roller upon the sash, substantially as described.

2. In a roller sash balance, the combination of plate A, lever C, roller J, and adjusting screw V having a pressure regulating spring V', with lever brake holder D having bearing D', and lever brake E having bearing E', substantially as described.

3. In a roller friction and anti-friction-rolling and sliding-balance, the combination of the lever brake holder D having a fulcrum bearing D', for bearing E' on lever brake E, axle supporting arms *s s'*, with lever brake

E having bearing E′, and roller J, all pivotally connected with lever C, and the latter movably attached to face plate A, and means for yieldingly adjusting the pressure of the lever C, upon the roller, substantially as described.

4. In a roller sash balance, the combination of face plate A having a lock supporting projection A′ with openings *a b*, roller lever C having a spring holding projection C′ and spring seat *k*, locking lever B having guiding arm *c*, locking arm *d*, spring arm *f* with spring seat *g*, connecting cross bar *e*, spring *h* interposed between seats *k* and *g*, on projection C′, and locking lever B, having lock handle B′, arranged and operated, substantially as described.

5. The combination with a sash balance, having a spring seat *k*, a face plate A provided with projection A′ having openings *a b*, for the application of a locking lever B provided with a locking tongue *d*, a guiding arm *c*, cross bar *e*, spring seat *g*, and spring *h* interposed between spring seats *k* and *g*, and lock handle B′, arranged, and operated, substantially as described.

6. In combination with a sash lock having a face plate A, locking lever B provided with a sash locking tongue *d*, operated by a spring and lock handle B′, the sash engaging plate F, having locking notches F′ F″ and incline F‴, one end of plate W′, beveled and grooved, the other end W, rounded and grooved, substantially as described.

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