(No Model.)

W. C. MERCKEL.

SASH BALANCE.

No. 384,459. Patented June 12, 1888.

Fig. 1.

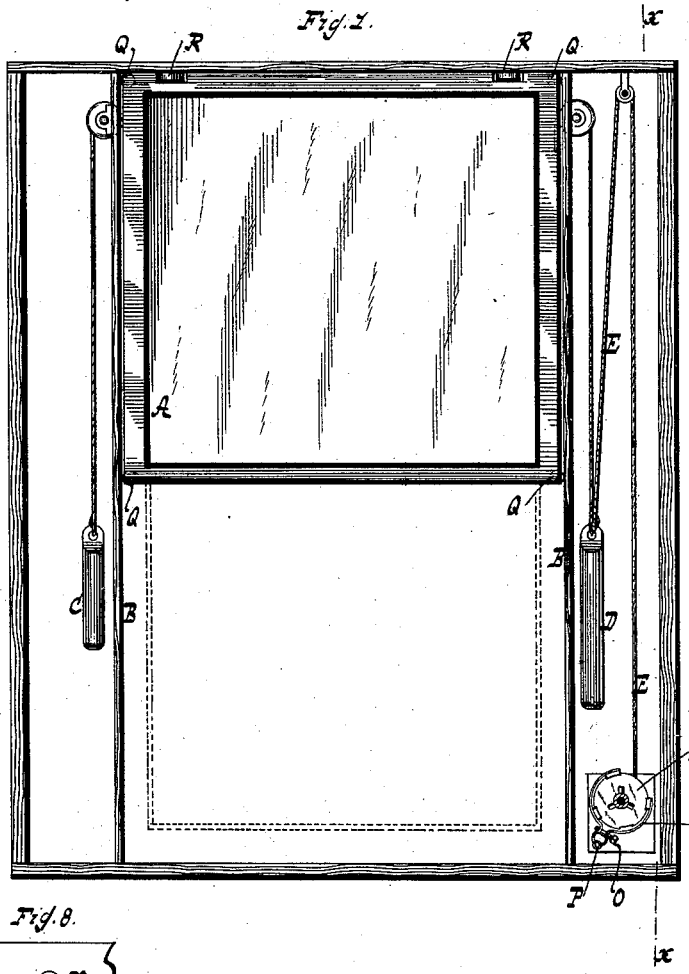


Fig. 2.

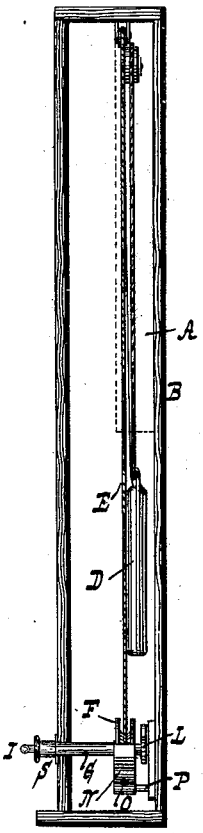


Fig. 8.

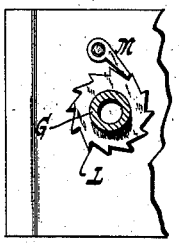


Fig. 3.

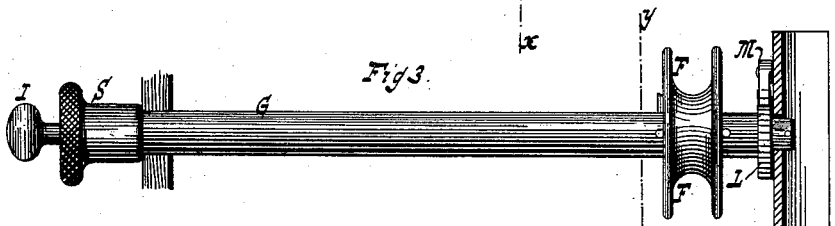


Fig. 4.

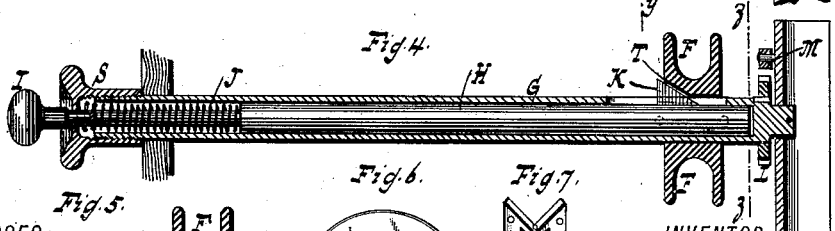


Fig. 5.

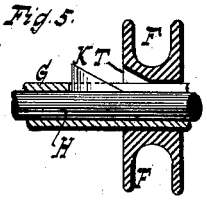


Fig. 6.

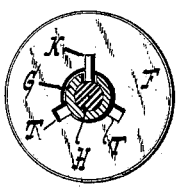
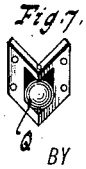


Fig. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM C. MERCKEL, OF NEW YORK, N. Y.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 384,459, dated June 12, 1888.

Application filed March 2, 1888. Serial No. 266,072. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. MERCKEL, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Devices for Operating Window-Sash, of which the following is a specification.

This invention relates to a device by which a window-sash can be readily opened or closed, as set forth in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a sash with an operating device. Fig. 2 is a section in the plane *x x*, Fig. 1. Fig. 3 is a detail side elevation of a sash-operating device. Fig. 4 is a longitudinal central section of Fig. 3. Fig. 5 is a detail view, showing parts of Fig. 4 in different position than in Fig. 4. Fig. 6 is a section in the plane *y y*, Fig. 3. Fig. 7 is a detail perspective view of an anti-friction roller. Fig. 8 is a section in the plane *z z*, Fig. 4. In Figs. 3, 4, 5, 6, 7, and 8 the scale is larger than in Figs. 1 and 2.

Similar letters indicate corresponding parts.

In the drawings, the letter A indicates an upper window-sash adapted to slide down and up in its frame B and connected in any suitable well-known way with weights C D. The weights C D are constructed to weigh somewhat more (say, about five pounds more) than the sash B, so that said weights tend to move the sash up to its closing position whenever said weights are left free to act on the sash. The weights C D are shown as being unequal, the weight C composing about two-fifths and the weight D about three-fifths of the conjoint weight of the weights C D.

In the window-frame B and supported by suitable bearings is arranged a rotating sleeve, G, having near its inner end a longitudinal slot, and a ratchet-wheel, L, engaged by a pawl, M, pivoted to the frame. A rod, H, extends into the shaft and is provided near its inner end with a lug, K, which extends laterally through the slot in the sleeve and is adapted to engage and disengage a slot in a pulley, F, loosely mounted on the sleeve. The other end portion of the rod H is encircled by a spring, J, and said end of the rod projects from the sleeve and is furnished with a handle, I, whereby the rod can be drawn outward to disengage the lug K from the pulley F, while the spring J serves to retract the rod and cause its lug to again engage the slot in the pulley F. The handle I also serves to rotate the rod H, so that when its lug K engages the pulley by turning the rod the pulley and the sleeve G will be revolved. A cord, E, extends from the weight D over a pulley at the top of the frame B to the sash A, to which said cord is attached.

If power is applied to the handle I to rotate it while the lug K engages the pulley F, said rotation is transmitted to the sleeve G and the pulley F, so that the cord E is wound on the pulley. A lifting-action is thus exerted on the weight D, and as the weight D is lifted the sash A will descend so as to produce an opening at the upper part of the window. When the power is removed from the handle I, the pawl and ratchet L M will hold the sleeve G from rotation, and the lug K, engaging the pulley, holds the latter in the position in which it was when the power was removed from the handle I, thus preventing retrograde motion of the parts and keeping the window open.

To close the window, the handle I and rod H are drawn or moved outward against the resistance of the spring J, so as to move the shoulder K out of engagement with the pulley F, as seen in Fig. 5. As the pulley F sits loosely on the sleeve G, said pulley F is now free to turn on the sleeve, thus leaving the weight D free to fall or descend. The action of the weight D and of the weight C will then cause the sash A to rise and close the upper part of the window.

To prevent too rapid motion of the pulley or actuator F, a brake, N, is applied to said pulley. Said brake is supported by a pin or support, P, and a set-screw, O, can regulate the action of the brake on the pulley. The spring J, which tends to keep the rod H in the position shown in Fig. 4, is shown placed between a shoulder on the rod H and a screw-eap, S, on the sleeve G. To facilitate the engagement of the lug K with the pulley F, said pulley is provided with a number of slots, T, Fig. 6, and one of which slots is adapted to engage the lug K, so as to lock the pulley, the

sleeve G, and the rod H together. To enable the sash A to travel easily in the frame, anti-friction rollers Q, Figs. 1 and 7, of suitable material—such as rubber—are placed between the sash A and the frame B. The sash A is also provided with one or more anti-concussion pads, R, Fig. 1, of suitable material—such as felt or soft rubber—which deaden the shock caused by the weights C D rapidly moving the sash against the upper part of the window-frame.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the sash, the cord, and the weight, of sleeve G, having a slot, a pulley, F, loose on the sleeve and to which the cord is connected, and a lengthwise-movable rod, H, in the sleeve, having a lug projecting through the slot to engage and disengage the pulley, substantially as described.

2. The combination, with the sash, the cord, and the weight, of the sleeve G, having a slot, and a ratchet-wheel, L, a pawl, M, a pulley, F, loose on the sleeve, a lengthwise-movable rod, H, in the sleeve, having a lug, K, to engage and disengage the pulley, a handle, I, on the rod, and a retracting spring, J, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

WM. C. MERCKEL. [L. S.]

Witnesses:
W. C. HAUFF,
E. F. KASTENHUBER.