B. F. McCUNE.

SASH-BALANCE.

No. 189,317. Patented April 10, 1877.

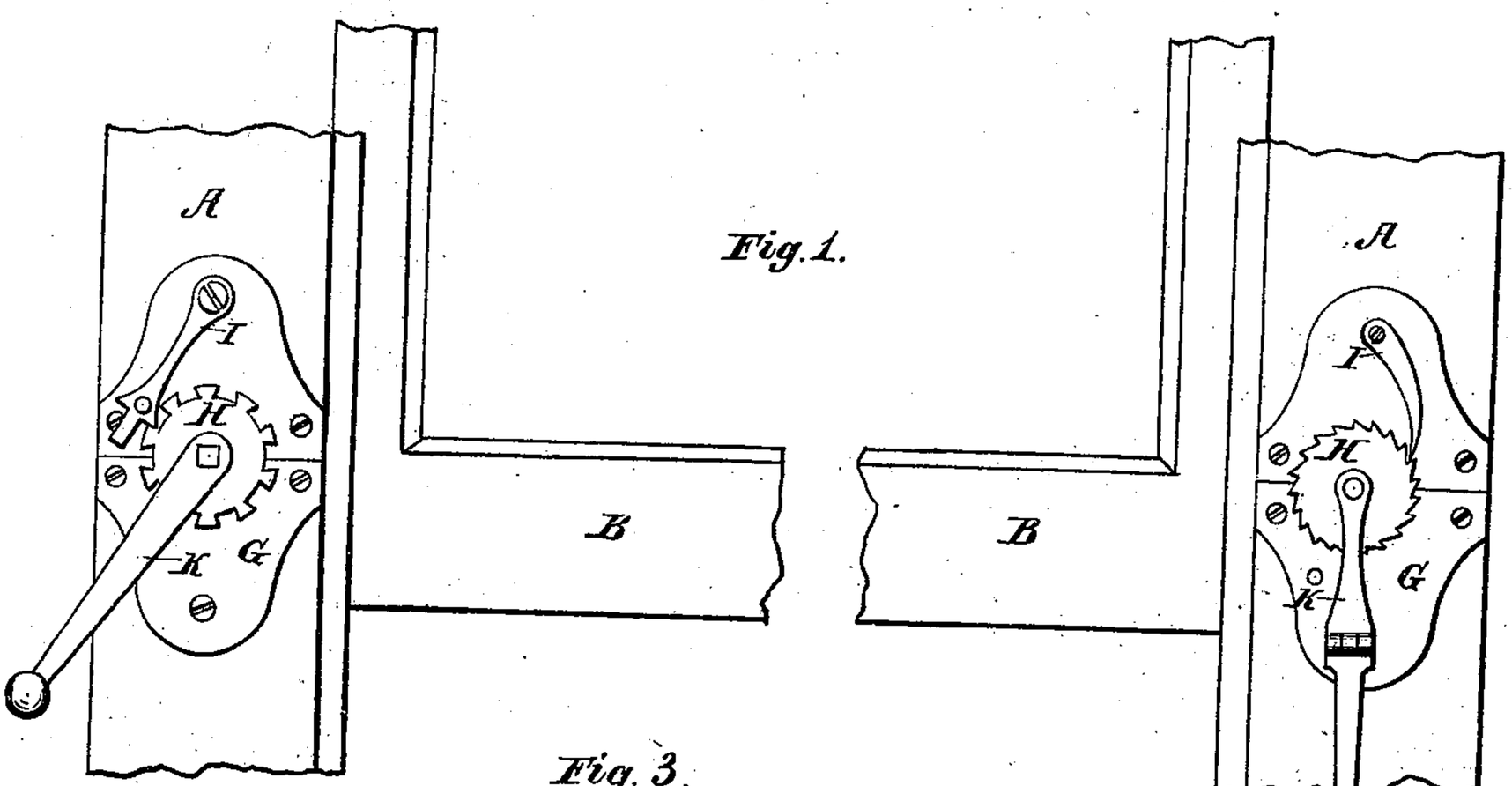


Fig. 1.

Fig. 3.

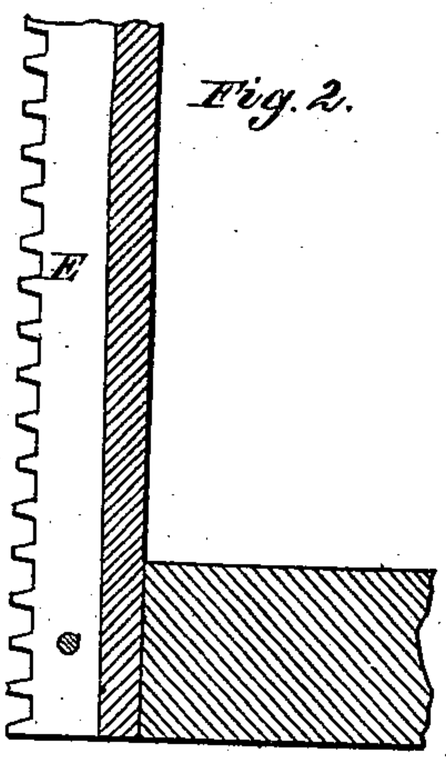


Fig. 2.

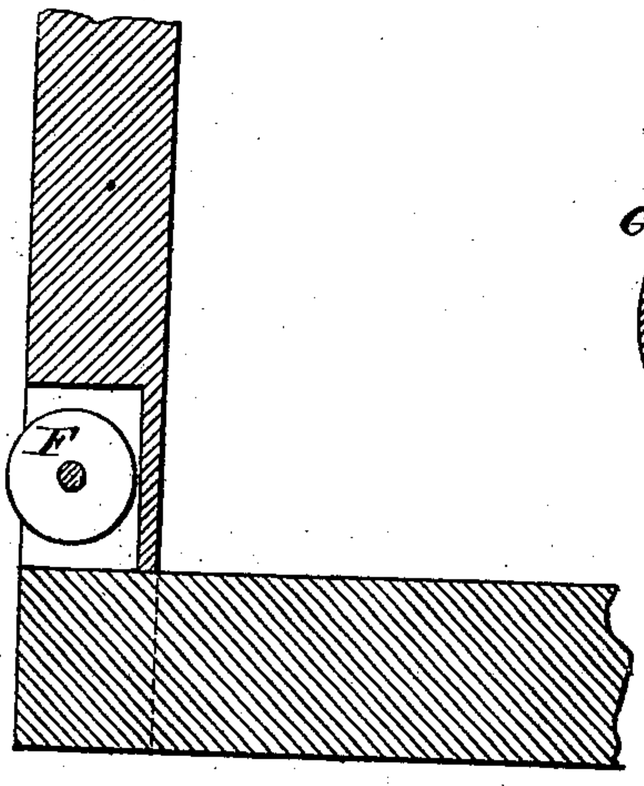


Fig. 4.

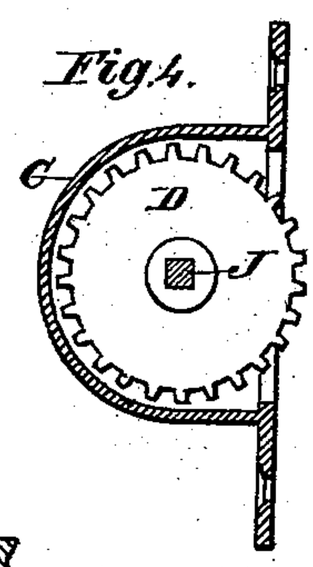
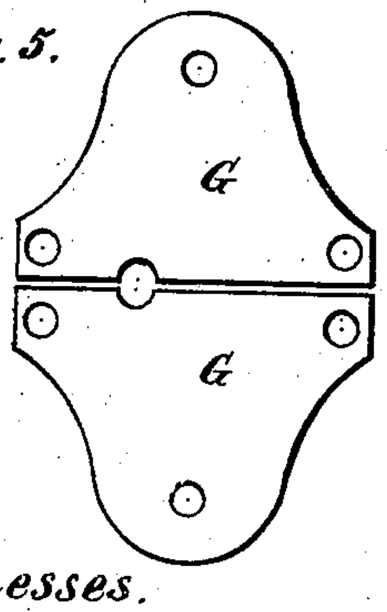


Fig. 5.



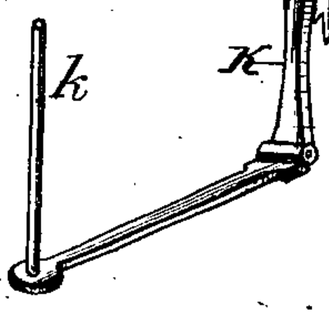
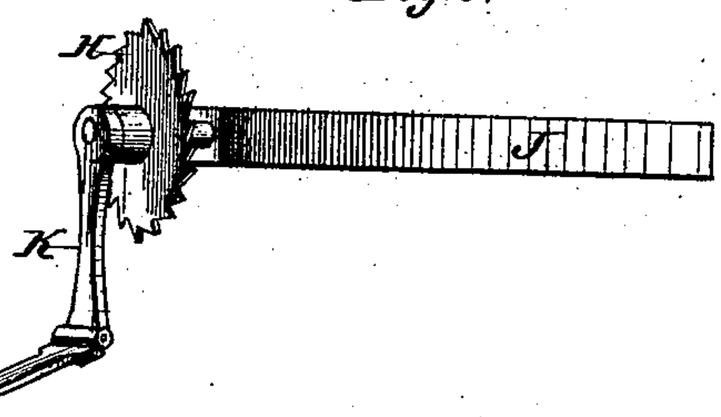


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

BENJAMIN F. McCUNE, OF BARBOURSVILLE, WEST VIRGINIA.

IMPROVEMENT IN SASH-BALANCES.

Specification forming part of Letters Patent No. **189,317**, dated April 10, 1877; application filed May 6, 1876.

To all whom it may concern:

Be it known that I, BENJAMIN F. McCUNE, of Barboursville, in the county of Cabell and State of West Virginia, have invented certain new and useful Improvements in Sash-Balances, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, making a part thereof.

The object of my invention is to provide a sash-balance which shall be adapted to raise, lower, or adjust the sash with greater facility than those ordinarily in use, and at the same time, by very simple means, to lock the sash firmly when closed.

My invention consists, mainly, in the novel combination and arrangement of a cogged rack-bar, a recessed box or case containing a pinion or cog wheel, a two-part facing-plate a suitable ratchet-wheel and pawl, an operating-shaft, and a crank or folding handle, the end of which forms a locking-pin, which engages with a suitable hole in the facing-plate for securely locking the sash when closed, all as will be hereinafter more fully described, and definitely claimed.

In the accompanying drawings, Figure 1 is a front elevation of a window frame and sash with my sash-balance attached, showing two forms of the handle and pawl and ratchet. Fig. 2 is a section of the sash, with cogged rack-bar attachment. Fig. 3 is an opposite section of the sash, with an anti-friction roller attached. Fig. 4 is a detached inside view of the box or case containing the cog-wheel or pinion. Fig. 5 is a detached view of the two-part facing-plate; and Fig. 6 is a perspective view of the operating-shaft, the folding handle or crank with its locking-pin, and of one form of the pawl and ratchet.

Like letters of reference in every case indicate like parts.

A represents the window-frame, and B the sash. C represents a box or case, opening in the center, and mortised in the window-frame; D, a pinion or cog wheel journaled within the box; E, a cogged rack-bar attached to one side of the sash; F, an anti-friction roller on the opposite side of the sash, preferably used, but which may be dispensed with; G, a two-part facing-plate longitudinally divided, attached by screws, and having suitable opening for passage of the round portion of the operating-shaft; H, a suitable ratchet-wheel, which may be either saw-toothed or with square notches; I, a pivoted pawl, which may be either a simple catch or formed with projecting shoulders; J, a squared shaft passing through the box and cog-wheel, with rounded ends near the facing-plate, adapted to carry the crank, and operate the device, and K a folding handle or crank, having its end formed into an inwardly-projecting locking-pin, *k*, for engagement with a suitable hole in the lower part of the facing-plate.

To enable others skilled in the art to make and use my said invention, I will proceed more particularly to describe my method of constructing and applying the same.

The box or case is of cast or wrought iron, opening in the center to receive the pinion or cog wheel, and both of these may be made of varying sizes to suit different sizes of sash. The box and pinion are mortised into the edge of the window-frame at or near the junction of the meeting-rails of the sashes, and a hole is bored in the casing large enough to pass the operating-shaft into the recessed box and cog-wheel. The facing-plate is longitudinally divided into two parts, is screwed onto the face of the window-frame, and has an aperture which fits closely around the journal of the operating-shaft, and serves to steady the same. The ratchet-wheel is suitably arranged on the journal of the operating-shaft, and the pawl is pivoted to the upper half of the facing-plate in such position as to brace against the ratchet-teeth, and hold the sash at any desired height, or it may be reversed and serve as a locking device when the sash is closed. The crank, preferably formed into a folding handle, folds by means of a hinge, and, extending down below the ratchet-wheel, its inwardly-projecting end forms a locking-pin, which enters a hole in the casing-plate below the ratchet-wheel, and securely locks the sash when closed. One side of the sash has extending its entire length a cast-iron cogged rack-bar, which is secured in a vertical groove of the sash, into which rack-bar the pinion or cog wheel meshes. On the opposite side of sash I prefer to mortise in two small anti-friction

rollers, which keep sash from having too much play, and reduce the friction; but these rollers are not indispensable.

The operation of my improved sash-balance is simple, and easily understood. By turning the crank-handle, the intermeshing teeth of the pinion and rack-bar raise the sash, and the automatic operation of the pawl and ratchet hold it at the desired height. Two or two and a half revolutions of the pinion serve to elevate the sash its full length, and the pawl is released and the movement reversed to lower it again. When the crank or handle is folded in, the locking-pin formed upon the end of the same enters a suitable hole in the facing-plate, and securely locks the device down, and prevents tampering with the fastenings from the outside.

Various sizes of my improved sash-balance may be made adapted for light or heavy sashes, and the facing-plate, crank-handle, and other parts may vary in style, material, and ornamental finish.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

An improved sash-balance, consisting of the recessed box or case C, the pinion or cog wheel D, the cogged rack-bar E, the two-part facing-plate G, the ratchet-wheel H, and pawl I, the operating-shaft J, and the folding handle or crank K, formed with an inwardly-projecting locking-pin *k*, all constructed, arranged, and operating substantially as shown and described, for the purpose specified.

BENJAMIN F. McCUNE.

Witnesses:

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