

(No Model.)

2 Sheets—Sheet 1.

A. LANG.
SASH BALANCE.

No. 477,807.

Patented June 28, 1892.

Fig. 2. A

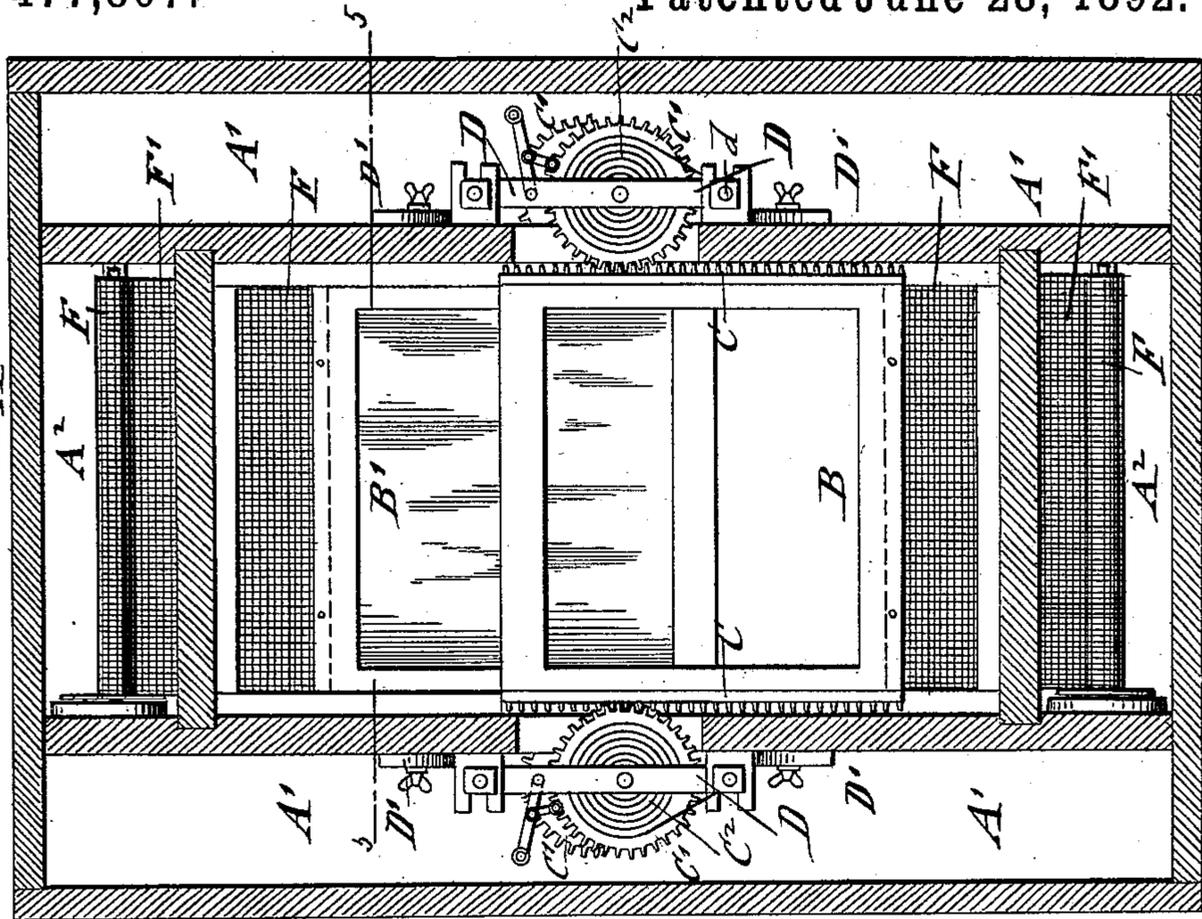
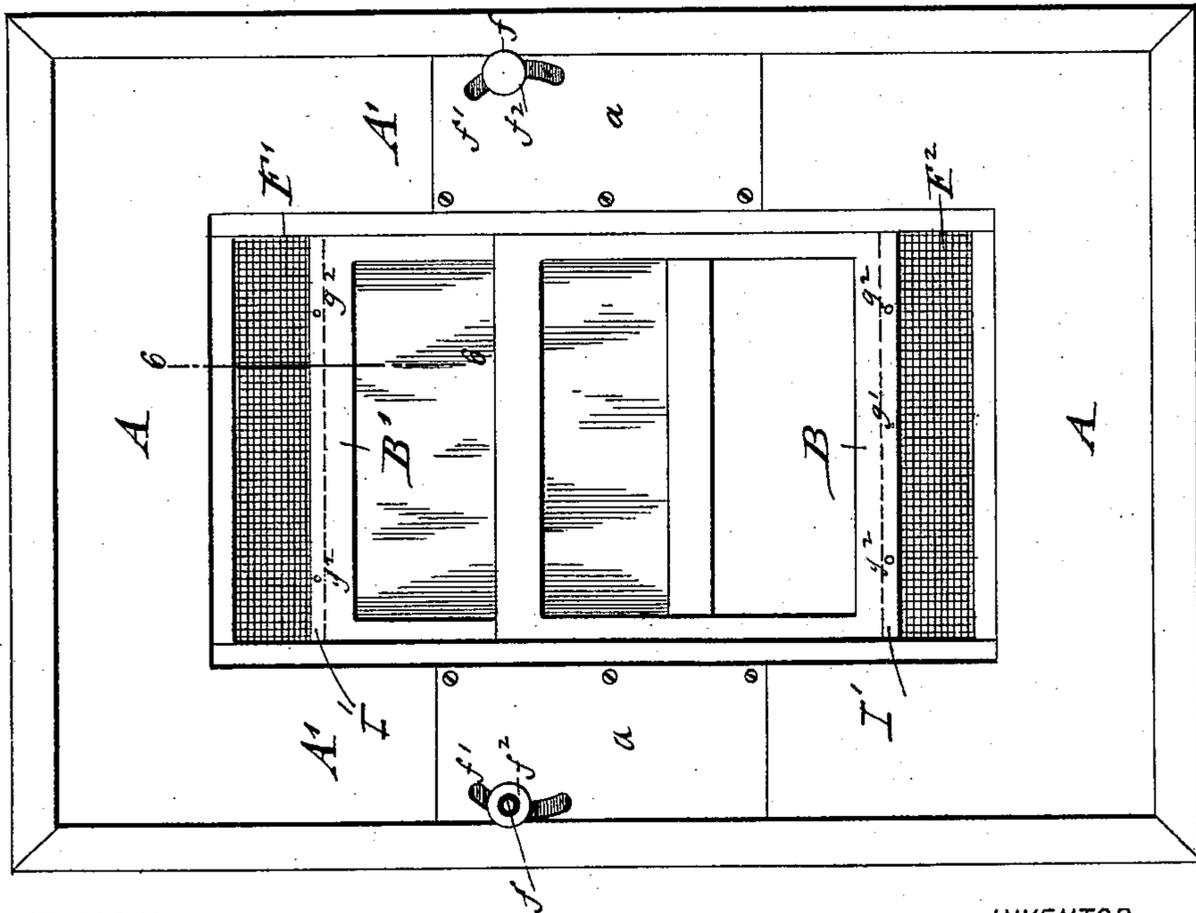


Fig. 1.



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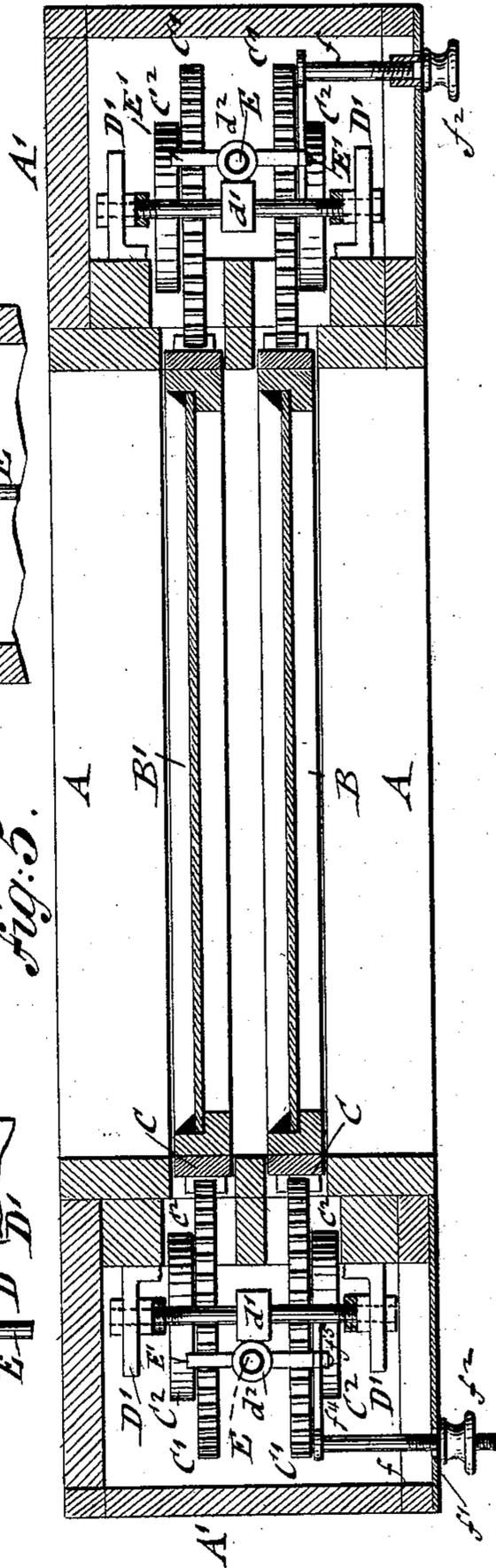
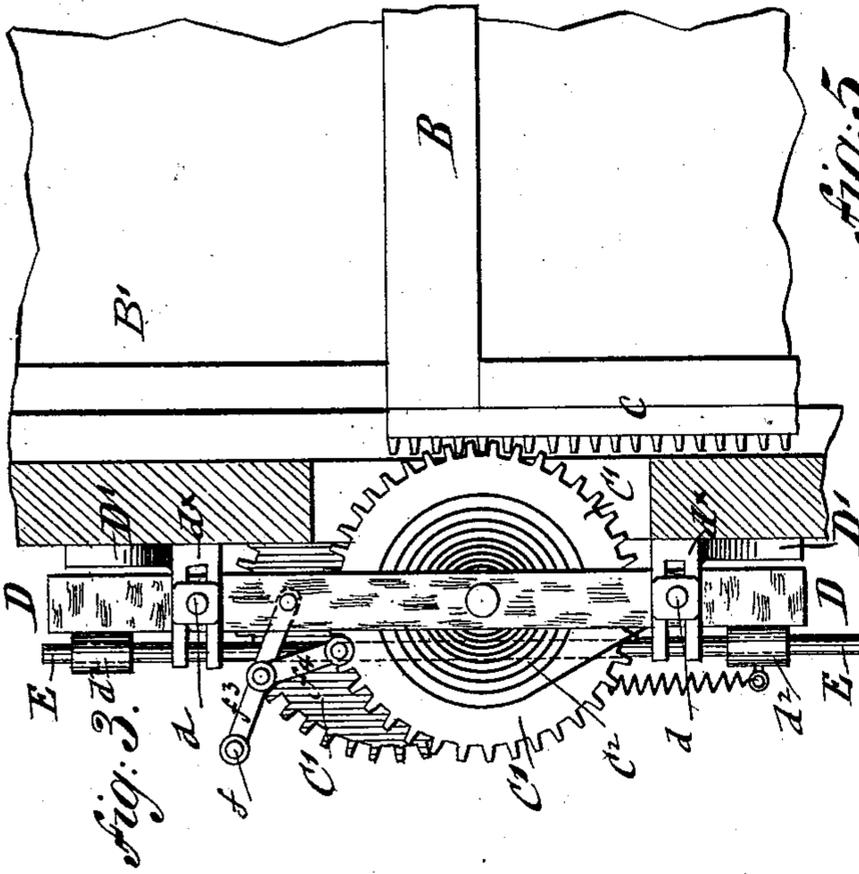
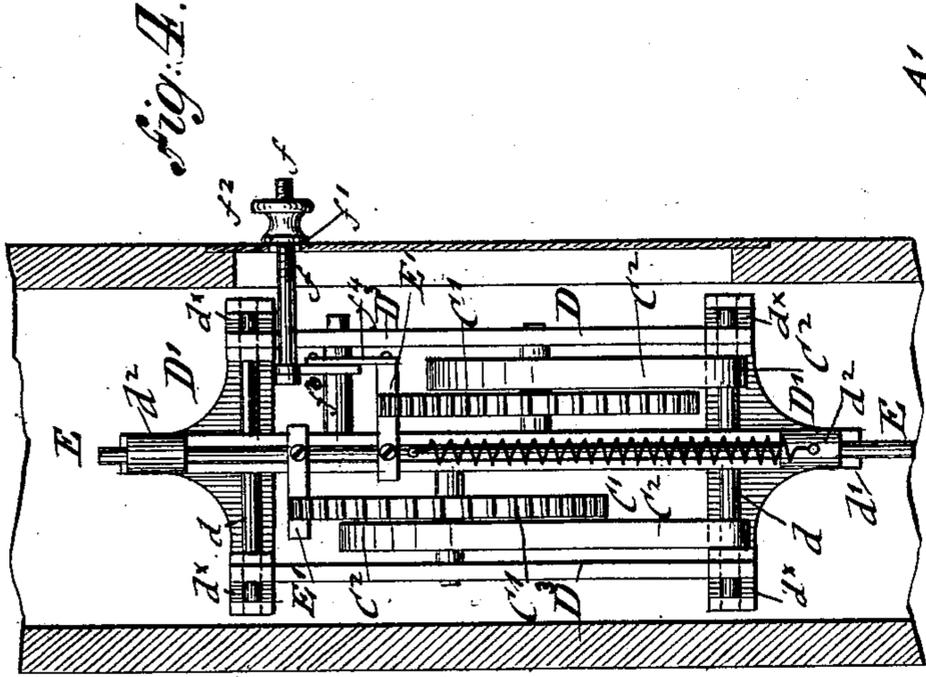
(No Model.)

2 Sheets—Sheet 2.

A. LANG.
SASH BALANCE.

No. 477,807.

Patented June 28, 1892.



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UNITED STATES PATENT OFFICE.

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SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 477,807, dated June 28, 1892.

Application filed January 6, 1892. Serial No. 417,177. (No model.)

To all whom it may concern:

Be it known that I, ANTON LANG, a citizen of the United States, and a resident of New Brunswick, in the county of Sussex and State of New Jersey, have invented certain new and useful Improvements in Window-Sashes, of which the following is a specification.

This invention relates to an improved sash balance and fastener by which the sash may be set to any desired position and automatically returned to its normal position, and by which both sashes may be firmly locked into any desired position and prevented from being opened either from the inside or outside.

The invention consists of the combination of a window-sash having racks applied to the side rails of the sash with pinions meshing with said racks and spiral balancing-springs applied to the shafts of said pinions. In connection with the pinions locking devices are used, so as to lock both sashes in position when the locking devices are placed in engagement with the pinions. The bearings of the pinion-shafts, the outer ends of the balancing-springs, and the guide-rod of the locking devices are supported by a detachable frame, which is applied to brackets attached to the window-frame, so that the entire sash balancing and fastening mechanism can be applied to or removed from the window-frame with great facility.

The invention consists, lastly, of certain details of construction and combination of parts, which will be fully set forth and described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of a window-frame and two sashes with my improved spring balance and fasteners applied thereto. Fig. 2 is a vertical section through the window-frame, showing the sashes and their balancing and fastening devices in side elevation. Figs. 3 and 4 are respectively a side elevation and an end elevation of the spring balancing and fastening devices, also at one side of the sashes, drawn on a larger scale. Fig. 5 is a horizontal section on line 5 5, Fig. 2, showing a top view of the sash-balancing and fastening devices, also on a larger scale.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a window-frame, and B B' the sashes of the same. To the side rails of the sashes B are applied racks C, which are engaged by the pinions C', that extend through openings in the stiles of the window-frame and that are acted upon by spirally-coiled balancing-springs C² in the nature of strong clock-springs, the size of which is in proportion to the weight of the sash to be raised. The inner ends of the balancing-springs C² are attached to the shafts of the pinions C', while the outer ends of the same are attached to the lower transverse rod *d* of a rectangular oblong frame D, which is supported by recessed lugs *d*^x of cast-metal brackets D', that are attached by screws or otherwise to the window-casing. The window-frame A is provided with boxes A' at each side of the sashes, in which boxes the sash balancing and fastening devices are arranged, as shown in Fig. 2. The rectangular frame D is provided with a center bar *d*' and two side bars D^s, by which the bearings of the pinion-shafts are supported. The center bar *d*' is provided at its upper and lower ends with fixed sleeves *d*² *d*², in which is guided a spring-actuated rod E, that carries the pawls E', which extend in opposite directions from the rod E and which are attached at different heights to the same, so as to engage, respectively, the pinion C' of the lower sash B and the pinion C' of the upper sash B'. The pinion for the upper sash is arranged at some distance above the pinion for the lower sash, so that both pinions C' are always in gear with the racks C on the side rails of the sashes. The spring-actuated pawl-carrying rod E is operated by means of a suitable crank-pin *f*, which projects through a slot *f*' in the front part of the window-frame and which is provided at its outer end with a screw-nut *f*². The inner end of the crank-pin *f* is attached to an arm *f*³, that is pivoted to the upper part of the frame D, as shown in Fig. 3. The arm *f*³ is connected by a pivot-link *f*⁴ with one of the parts E', so that the raising or lowering of the crank-pin *f* will raise or lower the rod E and pawls E' and cause the withdrawal of the latter from the engagements of the same with the pinions C'. In place of the crank-pin and its connection with the pawl-carrying rod E any other equivalent mechanism may

be used by which the rod E and pawls can be operated. The screw-nut f^2 at the left-hand side of the frame A is adjustable on the crank-pin f , so as to permit the clamping of the pin f to the frame A and hold thereby the pawls E' either out of engagement with the pinions or place them in engagement therewith, while the screw-nut at the right-hand side of the window-frame A is made detachable from the pin f , but is not adapted for adjustment thereon.

At each side of the window-frame A is arranged a detachable portion a , which is located at the height of the meeting-rails of the sashes and which serves for inserting the entire sash-operating mechanism in position or for removing the same for repairs in case this would be necessary. The detachable portion a is attached in position by means of screws or other fastening devices and provided with a slot f' for the crank-pin f , by which the pawl-carrying rod E is operated. The tension of the balancing-springs C^2 is so adjusted that the sashes can be readily placed into any desired position. For moving the sashes the pawls E' have to be withdrawn from the pinions C' at both sides of the frame E. For the ordinary every-day use of the sashes it is preferable to set the pawls at the left-hand side of the sashes by means of the clamping screw-nut f^2 permanently into raised position and withdraw the pawls at the right-hand side of the sashes wherever either the upper or lower sash is to be set. As soon as the desired position of the sash is obtained, the right-hand screw-nut is released, so that the pawls immediately engage the pinions and stop the sash at the required point. Whenever it is desired to lock the sashes either in open or closed position, so as to prevent interference with the same either from the outside or inside, the left-hand pawls are lowered into mesh with the pinions at the left-hand side of the sashes and retained in position by the clamping-nut f^2 when the sashes cannot be lifted at all. By removing the screw-nut f^2 at the right-hand side the position of the sashes cannot be changed at all, even from the inside, so that the sashes may be locked during the absence of the owner from the building or

when it is desired to prevent the changing of the same by servants or children.

When it is desired to close the sashes, the pawls are lifted out of engagement with the pinions, upon which the sashes can be readily moved into closed position, the lower sash winding up the balancing-springs, while the lifting of the upper sash is facilitated by its balancing-springs.

My improved sash balance and fastener has the following advantages: First, that the sashes can be set quickly and conveniently by grown persons as well as by children, as only the lifting of the pawls is required, and, secondly, that the locking devices secure the sashes in any desired position, so as to furnish thereby a reliable safety device for the same.

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

1. The combination of a sash having a rack attached to its side rail, a rectangular frame supported in brackets and provided with parallel side bars, and a vertical middle bar, sleeves on said middle bar, a vertically-movable spring-actuated rod guided in said sleeves, a pinion meshing with the sash-rack, pawls on said vertically-movable bar engaging said pinions, and means for operating said pawls.

2. The combination of a sash having a rack attached to its side rail, a frame supported in brackets and provided with side bars and a vertical middle bar, guide-sleeves on said middle bar, a spring-actuated rod guided in said sleeves, a spring-actuated pinion meshing with the sash-rack, pawls on said vertically-movable rod engaging said pinions, an arm, as f^3 , attached to the rectangular frame, a link connecting said arm and pawl, a crank-pin connected to the outer end of said arm and projecting through the window-casing, and a nut on the outer end of said crank-pin.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ANTON LANG.

Witnesses:

PAUL GOEPEL,
CHARLES SCHROEDER.