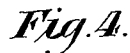
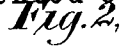


J. H. BANE.
SASH BALANCE.

Patented Oct. 29, 1895.



INVENTOR

BY *J. K. Bane*

MANUEL
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UNITED STATES PATENT OFFICE.

JOSEPH HENRY BANE, OF BARRE, MASSACHUSETTS.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 549,047, dated October 29, 1895.

Application filed February 7, 1895. Serial No. 537,627. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HENRY BANE, of Barre, in the county of Worcester and State of Massachusetts, have invented a new and Improved Sash-Balance, of which the following is a full, clear, and exact description.

My invention relates to an improvement in sash-balances; and it has for its object to provide a sash-balance which will be an improvement upon the balance for which Letters Patent were granted to me March 26, 1895, No. 536,452, the improvement being such that the balance will be simplified in its construction and rendered more durable and more readily applicable to window-frames.

Another object of the invention is to so construct the balance that the spindle upon which the pinion revolves will be capable of lateral movement, being controlled by a spring-brake and an adjusting device, whereby before introducing the window-sash into the frame the pinions to engage with the sash may be carried within their casing, thus leaving the sash-groove perfectly free and uninterrupted; and, furthermore, the sash-balances are so constructed that they may be used right and left, one having engagement with each side of the window-sash.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical sectional view of the left-hand portion of the window-frame and likewise a vertical section through the sash-balance, the section being taken through the brake-wheel, showing the brake and adjusting device in side elevation, and the said view likewise illustrates the left-hand side of the window-sash in engagement with the sash-balance. Fig. 2 is a view similar to Fig. 1, but the section is taken through the right-hand side of the window frame and sash, and the section through the sash-balance is taken in front of one face of the pinion engaging with the window-sash. Fig. 3 is a horizontal section through the left-hand section of the

window frame and sash, illustrating the sash-balance in plan view, the horizontal section being likewise taken through the casing of the said balance; and Fig. 4 is a horizontal section through the right-hand section of the window frame and sash, and also a horizontal section through the central portion of the sash-balance.

In carrying out the invention a casing A is employed, in which the operative portion of the sash-balance is located. This casing is provided in its face-plate, at or near its center, with a longitudinal slot 10, and the casing is adapted to be introduced into the right and left upright portions of a window-frame B, at the sash-grooves 11 thereof, as shown in Figs. 1 and 2, the face-plate being made flush with the base-wall of the sash-groove. In each side of the casing, at or near the center, a transverse slot 12 is made, and through these slots the ends of a spindle 13 project. This spindle is somewhat in the nature of a bolt, having a head at one end, a nut at the other, and a washer adjacent to the head and adjacent to the nut, as illustrated in Fig. 4. Therefore it will be obvious that the spindle has lateral movement in the casing.

A pinion 14 is loosely mounted upon the spindle 13, and in one face of the pinion a recess 15 is made, as shown in Fig. 2, the recess being provided with cavities 16 in its walls at predetermined preferably equal distances apart, and within each cavity a pawl 17 is pivoted, the pawls and cavities being usually three in number, as illustrated; but a greater or less number may be employed and the pawls are so pivoted in the cavities that when not in action they may be completely within the same.

Opposite the pawl-carrying face of the pinion 14 a brake-wheel 18 is mounted on the said spindle 13. This brake-wheel is provided with a peripheral groove 19, and has formed upon one of its side faces a ratchet-wheel 20, (shown in Figs. 2 and 4,) the said ratchet-wheel being adapted to be engaged by the pawls 17, and the teeth of the ratchet-wheel are so formed that those at the top of the ratchet-wheel will point in the direction of the interior of the casing or away from the outer peripheral surface of the pinion, as is clearly shown in Fig. 2.

A brake-arm 21 is pivoted upon a rod 22, located within the casing at the rear of the pinion and brake-wheel, and this brake-arm is provided with a brake-shoe 23, adapted for engagement with the grooved surface 19 of the brake-wheel 18. An adjusting-arm 24 of angular construction, having its vertical and horizontal members pivotally connected, is pivotally supported by means of a bar 25, passed through the upper end of its vertical member, the bar 25 being preferably back of the bar or rod 22, pivoting the brake-arm, and the adjusting-arm is provided with a spring 26, ordinarily secured to its vertical member, which has bearing against the rear surface of the brake-arm 21. An adjusting-screw 27 is passed through a suitable aperture in the lower portion of the casing and into the outer end of the horizontal member of the aforesaid adjusting-arm, as shown in Fig. 1.

As heretofore stated, one of these sash-balances is placed in each sash-groove, and the window-sash C is provided upon each side with a longitudinal rack 27^a, these racks being adapted for engagement with the teeth of the pinions 14. Lost motion may be taken up at any time by adjusting the screw 27 and thereby manipulating the adjusting-arm 24, causing the spring of the arm to bear with greater or less tension upon the brake-arm 21, thus forcing the spindle 13, carrying the pinion and brake-wheel, farther outward through the opening 10 in the casing. Under this construction a window-sash may be placed in a window-frame as readily as the ordinary sash, since by loosening the adjusting-arm, and thus removing tension from the brake-wheel, the pinions may be forced entirely within their casings, and therefore when the sash is placed in position in the frame there will be nothing to interfere with the racks 27^a. A sash having been placed in position, it is raised or lowered sufficiently to permit access to the adjusting-screw 27, and by tightening up that screw sufficient tension will be applied to the brake-wheel to force the pinion controlled by said brake-wheel into mesh with the rack with which it is to engage.

In operation, it is obvious that the sash may be raised readily, since the pinions will turn loosely on the spindle 13, and when the sash is released the pinion, turning in a reverse direction to the slightest degree, will cause at least two of its pawls 17 to engage with the ratchet-wheel of the adjacent brake-wheel, and, since the tension of the brake-wheel will have been regulated to counterbalance the weight of the sash, the sash will be held where it is left; but when it is desired to lower the sash it may be readily done by simply pushing it downward, the power necessarily applied being sufficient to overcome the power of the brakes.

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

1. The combination with a casing provided with a transverse slot in each side, of a sliding spindle in the said slots, a pinion loose on the spindle, a brake wheel likewise loose on the spindle, a pawl and ratchet connection between the pinion and brake wheel; a spring pressed brake engaging the brake wheel, and means for releasing the pressure of the spring on the brake from the front of the casing, whereby provision is made for forcing the pinion entirely within the casing to facilitate the placing of the sash in the window frame, substantially as described.

2. The combination with a casing provided with a transverse slot in each side, of a sliding spindle in the said slots, a pinion loose on the spindle, a brake wheel likewise loose on the spindle, a pawl and ratchet connection between the pinion and brake wheel, a pivoted brake arm provided with a brake shoe at its end engaging the brake wheel, a pivoted angular adjusting arm, a spring on the vertical member of the said arm and engaging the brake arm, and an adjusting screw passing through the front of the casing into the horizontal member of the adjusting arm, substantially as described.

JOSEPH HENRY BANE.

Witnesses:

THOMAS BAKER MAY,
WILL HUBBARD THOMAS.