No. 646,153. Patented Mar. 27, 1900.

W. J. PARSONS.

SASH BALANCE.

(Application filed Mar. 15, 1898.)

(No Model.)

Fig. 2.

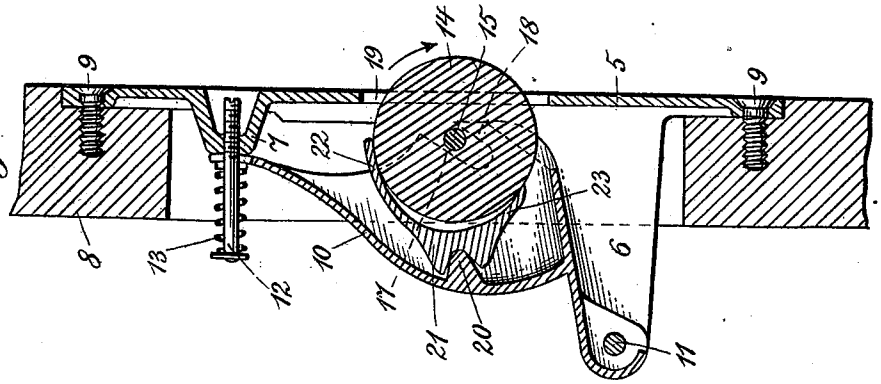


Fig. 3.

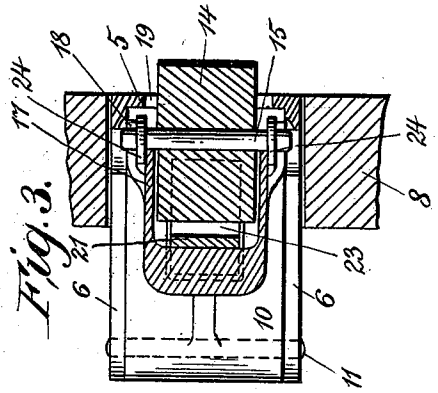
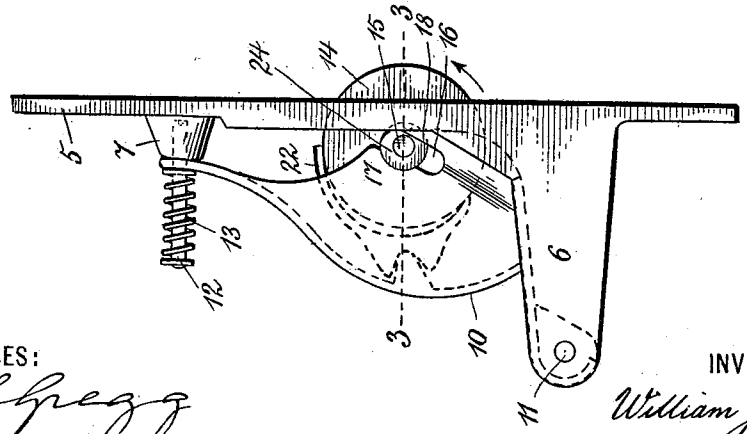


Fig. 1.



WITNESSES:

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WILLIAM J. PARSONS, OF MONTCLAIR, NEW JERSEY.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 646,153, dated March 27, 1900.

Application filed March 15, 1898. Serial No. 673,918. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PARSONS, a citizen of the United States, and a resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Roller Sash-Balances, of which the following is a specification.

My invention refers to devices for alternately maintaining a window-sash at varying elevations with reference to the window-frame within which it is designed to slide upward and downward, and particularly to that class of such devices known as "roller sash-balances," wherein a roller is so mounted upon a proper casing attached to the window-frame and so adjusted in its movements that while the window-sash is being made to slide upward such roller will thereby be made to freely revolve in contact with said sash, while during downward movement of the sash proper braking action will be applied to said roller, so as to prevent it from revolving and at the same time produce sliding friction between the periphery of the roller and the sash sufficient to arrest the latter and to overcome its weight tending to carry it downward.

The objects of my invention are to construct a roller sash-balance which shall be simple of construction and durable, wherein the parts forming the same shall be so disposed with reference to each other that they may be closely maintained in their proper relative positions during the operation of the device without interfering with its freedom of action, and to so construct and arrange the device that it shall be comparatively free from noise, which in general is an objectionable feature met with in the use of roller sash-balances. I accomplish these and other useful objects by the means hereinafter specified and set forth more particularly in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a roller sash-balance constructed according to my invention and placed in its operative position, while Fig. 2 is a central longitudinal vertical section thereof, and Fig. 3 is a horizontal section looking downward along line 3 3 in Fig. 1.

Corresponding figures of reference throughout the different views refer to corresponding parts.

5 is the face-plate, carrying near one end two brackets 6 6 and near the other end a recessed projection 7, the whole forming a casing upon which are mounted the movable parts of the device.

8 indicates the window-frame, to which said casing is secured by screws 9 9 in such manner as to bring the smooth side of the face-plate flush with that side of the window-frame facing the window-sash.

10 is a lever fulcrumed at 11 to brackets 6 6, its upper bifurcated end being guided along a bolt 12, screwed into projection 7, the outward movement of the lever being yieldingly resisted by spiral spring 13, placed around such bolt.

14 is a roller whose axle 15 is adapted to travel along slots 16 in the side walls 17 of lever 10, said slots being made slanting with reference to the face of plate 5, the edges of cheeks 17 and 18 forming the bearing-surfaces for axle 15, being placed at such relative distances as to permit of perfectly free movement and slight play of said axle within said slot. Roller 14 extends through an opening 19 in the face-plate.

20 is a projection on the inner surface of lever 10, placed laterally with reference to slot 16 and serving as a fulcrum for a U-shaped brake-shoe 21, having its upper arm 22 provided with a braking-surface adapted to engage with the upper portion of the periphery of roller 14, while its lower arm 23 is adapted to contact to a slight degree with the lower portion of the periphery of said roller, it being advisable to make the width of the bearing-surface on arm 22 substantially equal to the thickness of the roller, while that of arm 23 may be made narrower. The surface on brake-shoe 21 between said contact-surfaces recedes sufficiently from the roller to at all times clear the same. Axle 15 is shown to be provided with flanges or disks 24, so attached thereto near its ends that the same will travel along the outer surfaces of cheeks 17 and along the inner surfaces of cheeks 18, cheeks 18 being placed farther outward for such purpose than cheeks 17, as shown more particularly in Fig. 3. I thus guard against lateral displacement of the roller, which would be apt to interfere with its proper movements while the device is in operation, as more fully

explained hereinafter. While it will be seen that a single flange near one end of the roller-axle only would be sufficient to prevent its lateral displacement, I prefer to use one near each end of the axle, as shown, to secure more uniform travel of said axle along slot 16. As the wear on the roller-axles in this class of devices is apt to be considerable, it is important to alternately subject different portions of it to contact with bearing-surfaces on lever 10. This I accomplish by placing the bearing-surface on one of its cheeks farther away from the roller than that of the bearing-surface of the other corresponding cheek, as described above. I thus not only prolong the life of the device, but by preserving the proper thickness of axle 15 where it coacts alternately with cheeks 17 and 18 I maintain it in proper condition to operate smoothly and noiselessly. By constructing lever 10 as a hood extending over and underneath and laterally around the joint between said lever and the brake-shoe I guard against dirt and chips entering at this point and clogging and interfering with said joint. However, the lever may instead be perforated above and below the joint if it appear desirable to reduce its weight.

The operation of the device is as follows: After roller sash-balances have been put in position on each side of the window-frame and opposite each other the sash is inserted between said devices, so as to be in close contact with the rollers, the sash being generally of such width as to force the rollers 14, and thereby levers 10, actuating the same, outward to some extent, so as to move the bifurcated upper end of said lever away from projection 7 and permit of lateral play in both directions of lever 10, so as to compensate for any irregularities in the contact-surface of the sash-rollers, spring 13 being adapted to enforce such contact through the instrumentality of lever 10 and brake-shoe 21. As the sash is being pushed upward it will revolve the roller in the direction of the arrow in Fig. 1 and at the same time will tend to carry the roller upward bodily and to move its axle along cheek 17. This will tend to throw arm 22 toward the left and away from the periphery of the roller sufficiently to permit of its continuing to revolve without hindrance until the sash comes to a rest, the small contact-surface on lower arm 23 not being sufficient to prevent such movement, it being, however, useful in steadying the action of the roller, as well as that of the brake-shoe, and thus guarding against intermittent contact of the roller and arm 22 during such movement, which is apt to contribute largely toward the rattling noise commonly attending the use of roller sash-balances. Having cheeks 17 and 18 rigidly connected, and therefore their axle bearing-surfaces at fixed distances from each other, and guarding against lateral displacement of the roller, all as described above, further tends to make the operation of this device comparatively noiseless. As soon as upward movement of the window-sash has ceased its weight will have a tendency to carry it downward and to thereby revolve the roller in the direction of the arrow in Fig. 2 and to move the roller downward bodily, so as to force it against the bearing-surface on cheek 18. In consequence the upper longer arm 22 of brake-shoe 21 will be drawn toward the right by the roller, and close braking contact will thus be produced between their coacting surfaces, the contact of the axle with the non-yielding cheek 18 and the additional contact of the roller with the brake-shoe at 23 serving to prevent revolving of the roller, whereby only sliding contact between the roller and the window-sash will be permitted, which, providing proper tension is imparted to spring 13, will be sufficient to resist downward movement of the sash until additional force is applied thereto to draw the same downward.

I do not wish to confine myself to the details of construction herein described and shown in the drawings, as it will be readily seen that the same might be varied in many respects without departing from the spirit of my invention.

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

1. In a roller sash-balance, the combination with a casing having a proper face-plate, of a lever fulcrumed upon said casing and provided with upper and lower axle bearing-cheeks integral therewith and forming slots placed obliquely with reference to said face-plate, a roller having its axle adapted to travel in said slots, a **U**-shaped brake-shoe articulated to the lever and having bearing-surfaces above and below its fulcrum adapted to coact with the roller, and means for enforcing simultaneous contact between said bearing-surfaces and the periphery of the roller, and between the cheeks on one side of said slots and the axle of the roller, substantially as set forth.

2. In a roller sash-balance, the combination with a casing having a proper face-plate of a lever fulcrumed upon said casing and provided with axle bearing-cheeks integral therewith and forming slots, a roller having its axle adapted to travel in said slots, and a brake-shoe adapted to engage with said roller; the bearing-surface on one of the cheeks in a pair of cheeks forming a slot being placed at a greater distance from the roller than the bearing-surface on the other cheek, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 12th day of March, 1898.

WILLIAM J. PARSONS.

Witnesses:
C. L. HORACK,
J. A. S. GREGG.