No. 652,071. Patented June 19, 1900.

G. BARNES.

DEVICE FOR COUNTERBALANCING SASHES, SHUTTERS, &c.

(Application filed Feb. 2, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

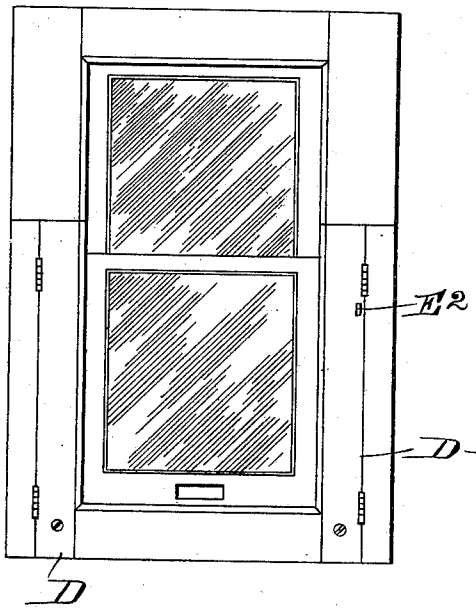


Fig. 2.

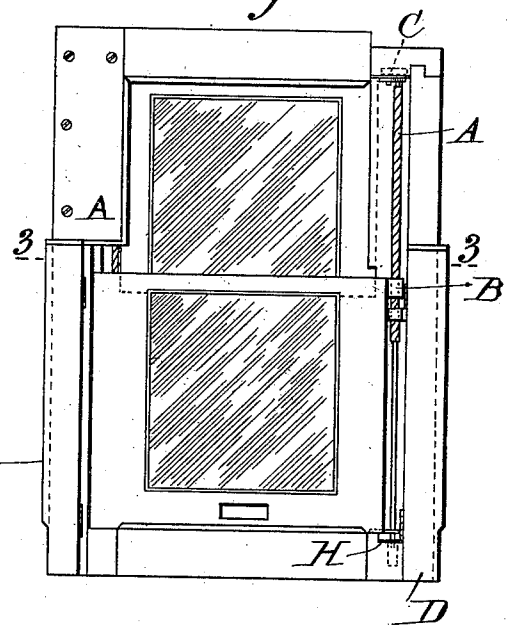
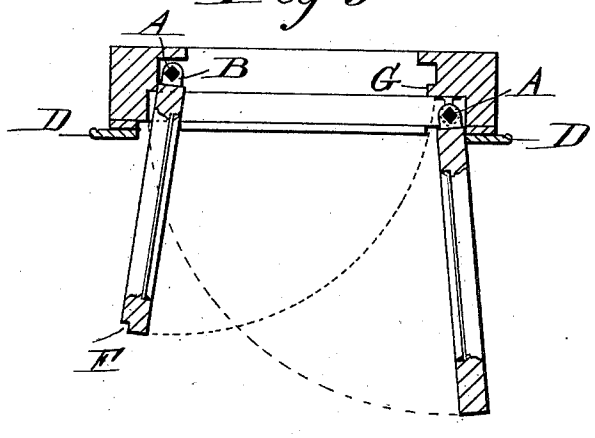


Fig. 3.



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Fig. 4.

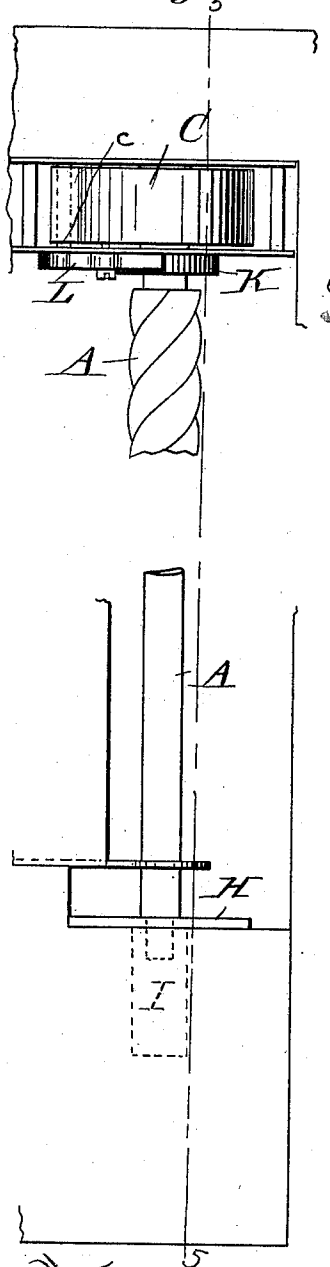


Fig. 5.

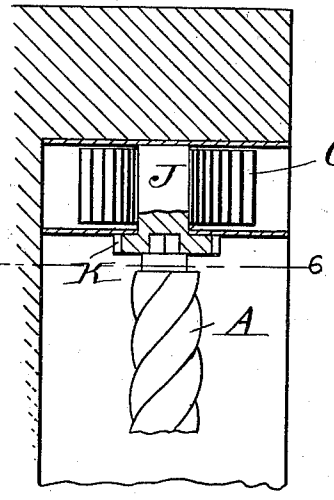


Fig. 6.

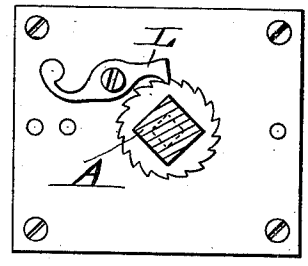
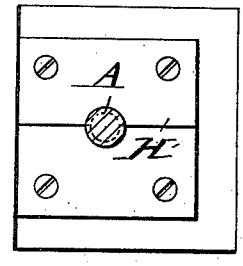


Fig. 7.



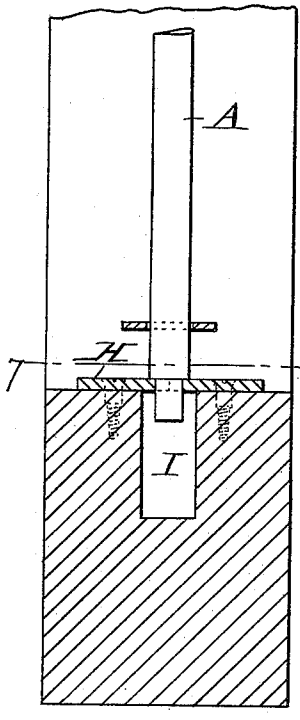
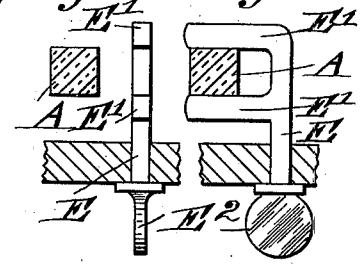


Fig. 8.

Fig. 9.



Witnesses

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George Barnes

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UNITED STATES PATENT OFFICE.

GEORGE BARNES, OF ALBERT PARK, VICTORIA, ASSIGNOR TO ARTHUR STOUGHTON BLOOMFIELD, OF MELBOURNE, VICTORIA.

DEVICE FOR COUNTERBALANCING SASHES, SHUTTERS, &c.

SPECIFICATION forming part of Letters Patent No. 652,071, dated June 19, 1900.

Application filed February 2, 1900. Serial No. 3,737. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BARNES, inventor, a subject of the Queen of Great Britain, residing at No. 230 Kerferd road, Albert Park, near Melbourne, in the British Colony of Victoria, have invented an Improved Contrivance for Counterbalancing Window-Sashes, Shutters, and the Like and for Securing Them in any Desired Position, of which the following is a specification.

This invention relates to the means used for counterbalancing window-sashes, and it has been devised in order to provide devices which will remedy the defects inherent in the cords and sash-weights generally in use and at the same time enable the sash or shutter to be held or secured at any desired height or be swung into the room for cleaning purposes or repairs or which will enable the sash to be entirely removed from the frame. It is applicable to the window sashes or shutters of ordinary buildings or to the sashes or shutters of railway-carriages, trams, and the like.

My invention comprises a sash-balance consisting of a spirally-threaded removable rod which detachably engages a rotatable socket-piece to which a spiral spring is attached and which is provided with a separable bearing for its other end. The spring-actuated socket-piece operates in such a manner that when the sash is lowered the spring will be wound up and the tension thereof will tend to rotate the twisted rod and assist in raising the sash. By adjusting the strength of the spring the weight of the sash can be counterbalanced to a nicety. One side of the sash is hung upon this rod, so as to form a pivot to enable the said sash to be swung into the room, and said rod is fitted into a side socket-piece, to which the end of the spiral spring above described is attached. This construction enables said rod, together with the window-sash, to be removed from the frame without affecting the spring, a ratchet being provided for preventing backward rotation of the socket-piece above referred to when it is desired to remove said sash and spring. Means are also provided for locking the sash in any desired position.

In order that the invention may be clearly understood, it will be described by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of an ordinary sliding window fitted with this invention. Fig. 2 is a similar view with certain parts removed. Fig. 3 is a horizontal section on line 3 3, Fig. 2, showing the sashes swung into the room. Fig. 4 represents, on an enlarged scale, a front elevation of one side of the window-frame, showing the twisted rod and the means for attaching it to the top and bottom thereof, a portion of said frame being broken out. Fig. 5 represents, on an enlarged scale, a longitudinal section on line 5 5 of Fig. 4, a part thereof being broken out. Fig. 6 represents a horizontal section on line 6 6 of Fig. 4, showing the ratchet and pawl for holding the socket in fixed position. Fig. 7 represents a horizontal section on line 7 7 of Fig. 5. Figs. 8 and 9 show detail views of the devices for locking the rod in fixed position.

The same letters of reference indicate the same or corresponding parts in all the figures.

A represents a twisted rod formed with a number of spiral threads upon it, arranged with a comparatively-steep pitch. These rods may be of any preferred shape in cross-section, but are preferably square, as illustrated in Figs. 6, 8, and 9, so long as the requisite threads can be formed upon them, and a nut or traveler B can be arranged to engage with them. These nuts or travelers B may be secured upon the sash, while the twisted rods A can be mounted in fixed bearings on the framework of the window. One rod is used on one side only of the window-sash, as illustrated in Fig. 3, when it is desired to swing the window-sash inward, although, if preferred, a twisted rod might be used on each side of the sash in cases where it is not desired to provide for swinging the sash inward, and again the rod might be so mounted as to support the center of the sash instead of one or both of its sides.

A spiral spring C is secured at one end to a socket-piece J, preferably inserted in the top of the window-frame, and at its other end to a pivot *c*. This spring is coiled around said socket-piece J, and through the medium of the rod A is wound up on the lowering of

the window, and the tension of this spring assists in raising the window, the sash being arranged to slide in vertical guides in the usual manner and not being allowed to rotate with the rod.

Provision is made for throwing back a part of the window-frame, so as to allow the sash-frame to be swung inward in order to clean the outside of the glass or for any other purpose, as illustrated in Fig. 3.

D D represent hinged flaps forming part of the window-frame and capable of being thrown back, as indicated in Figs. 2 and 3, so as to admit of the sashes being swung open.

The lower sash is wider than the upper one to allow room for the upper sash to be swung forward after the former, as illustrated in Fig. 3. The outer edge of the upper sash is rabbeted, as illustrated at F, and works behind a parting-bead G, which extends down to about the center of the window-frame. This might, if preferred, be dispensed with, the lower sash being used for the purpose of keeping the upper one in position.

The lower end of the twisted rod A is mounted in a bearing formed by two plates H H, as illustrated in Figs. 4, 5, and 7, so that when one of said plates is removed the end of said rod can be dropped into a hole or recess I in the window-frame, and its upper end can then be drawn down out of engagement with the socket-piece J, to which the spiral spring C is attached and around which it is coiled. This socket-piece is formed with a ratchet-wheel K, with which a pawl L can be placed in engagement when it is desired to disconnect the twisted rod and sash from the remainder of the window and its counterbalancing mechanism.

In order to rigidly lock the sash closed or opened or partially closed or opened, I provide an axially-oscillating lock-bar E, journaled in suitable bearings and having a laterally-projecting locking-finger E′ at its inner end portion, which can be swung into or out of engagement with the spirally-threaded shaft by oscillating the bar, as will be clearly understood by reference to Figs. 8 and 9. The outer end of the bar is provided with a finger-piece or handle E^2, by which to oscillate the bar. As shown, the bar is constructed with two fingers E′, spaced apart so that they may be made to embrace the spirally-threaded shaft or engage opposite flat end portions thereof, as best seen in Fig. 9. When the lock-bar is turned to swing its locking finger or fingers E′ in engagement with the spirally-threaded shaft, the latter is rigidly held stationary, and as the nut cannot now traverse the shaft the sash is locked in position wherever it may be. This is desirable in sash-balances of the character referred to, as the sash can be safely left open for ventilation. As the lock-bar is journaled in place when constructed as described, it is always in position for use and cannot become lost or displaced.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A sash-balance comprising a socket-piece having a spiral spring attached thereto and adapted to coil therearound, a detachable rotatable rod having one end adapted to fit in said socket-piece, a separable bearing adapted to receive the other end of said rod, and means for separating said bearing whereby the rod is permitted to drop and release the upper end thereof from said socket-piece.

2. A sash-balance comprising a socket-piece having a spiral spring attached thereto and adapted to coil therearound, means for locking said spring in coiled position, a detachable rotatable rod having one end adapted to fit in said socket-piece, a separable bearing adapted to receive the other end of said rod, and means for separating said bearing whereby the rod is permitted to drop and release the upper end thereof from said socket-piece.

3. A sash-balance comprising a rotatable socket-piece having a spiral spring attached thereto and adapted to coil therearound, a rotatable spirally-threaded rod having one end adapted to engage said socket-piece, and a bearing adapted to receive the other end of said rod.

4. A sash-balance comprising a rotatable socket-piece having a spiral spring attached thereto and adapted to coil therearound, a ratchet disposed on said socket-piece, a pawl adapted to engage said ratchet, a rotatable spirally-threaded rod having one end thereof adapted to engage said socket-piece, and a bearing for receiving the other end of said rod.

5. A sash-balance comprising a socket-piece having a spring attached thereto and adapted to be wound therearound, a detachable rotatable rod adapted to fit in said socket-piece, and means for releasing said rod from said socket-piece.

6. A sash-balance comprising a socket-piece having a spring attached thereto and adapted to be wound therearound, a detachable rotatable rod adapted to fit in said socket-piece, and means for releasing said rod from said socket-piece, and means for locking said socket-piece in fixed position.

GEORGE BARNES.

Witnesses:
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WILLIAM URQUHART.