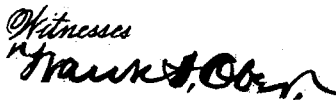


2 Sheets—Sheet 1.

No. 428,643.

Patented May 27, 1890.



Wm. Baggers

Inventors  
Jesse M. Smith and  
Robert M. Wright.

By their Attorneys

C. Snow & Co.

(No Model.)

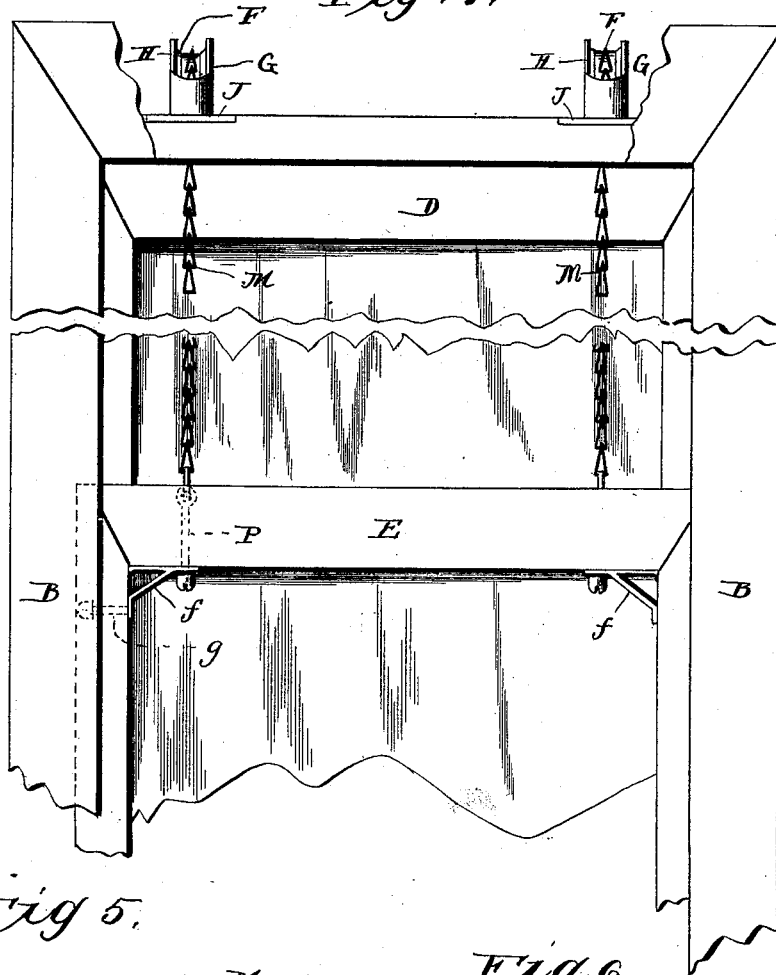
2 Sheets—Sheet 2.

J. M. SMITH & R. M. WRIGHT.  
SASH BALANCE.

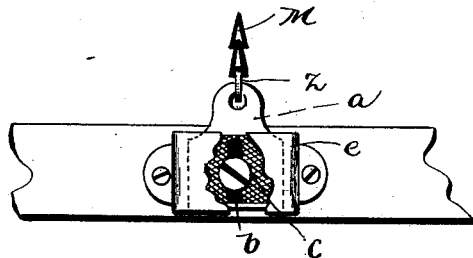
No. 428,643.

Patented May 27, 1890.

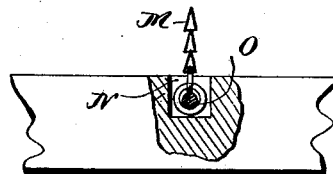
*Fig. 7.*



*Fig. 5.*



*Fig. 6.*



Witnesses

*Frank E. Co.*

*Wm. Bagger*

*Inventors*  
Jesse M. Smith and  
Robert M. Wright.

*By their Attorneys*

*C. H. Snow*

# UNITED STATES PATENT OFFICE.

JESSE MARION SMITH AND ROBERT MAXWELL WRIGHT, OF ANDERSON,  
SOUTH CAROLINA.

## SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 428,643, dated May 27, 1890.

Application filed April 2, 1889. Serial No. 305,748. (No model.)

*To all whom it may concern:*

Be it known that we, JESSE MARION SMITH and ROBERT MAXWELL WRIGHT, citizens of the United States, residing at Anderson, in the county of Anderson and State of South Carolina, have invented a new and useful Improvement in Sash-Balances, of which the following is a specification.

This invention relates to sash-balances; and it consists in the improved method of attaching a flat connecting-chain adjustably to the lower sash, so that strain may be relieved and the slack of said chain taken up when desired, the construction and arrangement of the details of which will be hereinafter described, and particularly pointed out in the claim.

In the drawings hereto annexed, Figure 1 is a front view of a window to which our improved sash-balance has been applied. Fig. 2 is a vertical sectional view taken on the line *xx* of Fig. 1. Fig. 3 is a sectional view illustrating a modified arrangement of the sash-pulley. Fig. 4 is a perspective view showing the sash-pulley and its casing detached. Fig. 5 is a detail view illustrating a modified method of attaching the connecting-chain to the lower sash. Fig. 6 is a detail view illustrating the preferred method of attaching the connecting-chain to the upper sash. Fig. 7 is a front view illustrating our invention as applied to unusually-heavy sashes.

The same letters refer to the same parts in all the figures.

A designates the sill, B B the jambs, and C the cap or top piece, of an ordinary window-frame, and D represents the upper sash and E the lower sash.

F designates the sash-pulley, which is journaled in a suitable oblong casing G, the cheeks H of which have suitable bearings for the axle or spindle I of the pulley, which is completely inclosed within said casing. The lower edges of the cheeks H are provided with laterally-extended flanges J, having screw-holes K at the four corners, which said holes are countersunk on both their upper and lower sides.

When our invention is applied to new windows, as shown in Figs. 1 and 2 of the draw-

ings, the casing of the pulley is secured, by means of ordinary wood-screws, to the upper side of the cap-piece C of the window-frame in such a position that the pulley shall be located centrally over and between their upper and lower sashes. Holes L L are bored vertically through the cap-piece to admit the ends of the chain M, which is passed over the pulley. Said chain may be of any suitable construction which is light, durable, and inexpensive; but it should be composed of flat links, which will run over a suitably-shaped groove in the pulley F. Centrally in the top rail of the upper section is formed a recess N, of sufficient size to receive one of the links of the chain, or a lap ring or link attached thereto, which is dropped into the said recesses and secured by means of a wood-screw O, passing transversely through the sash-rail and through the said link. In this manner the end of the chain is connected to the top rail of the upper sash in such a manner as to enable said sash to be raised to the extreme top of the window-casing, and, moreover, in such a manner as to preclude the possibility of the chain becoming accidentally detached. The opposite end of the chain, after passing over the sash-pulley and through the perforation in the cap-piece of the window-frame, is connected to the top rail of the lower sash by means of a screw-threaded wire P, the upper end of which is provided with a hook or eye Q, by means of which it is attached to the last link of the chain. The wire P passes through a vertical perforation R in the top rail of the sash, and its lower end is provided with an adjusting-nut S, by means of which the rod or wire P may be raised or lowered, so as to loosen or tighten the chain, as may be required to cause the sashes to fit accurately in the frame.

Heretofore in devices of the character above described considerable difficulty was experienced because sash-cords were used instead of chains, and when the cords were attached to the screw-threaded wires P the latter were extremely likely to turn in their sustaining-nuts S with the uncoiling of the rope strands, and thereby effect the automatic and undesirable lengthening of the cord and loosening

ing of the parts. Our flat chain not only prevents such twisting as it runs over the pulley, but it is also highly improbable that it will ever stretch, as cords would, or be affected by temperature, resulting in the failure to bring the sash D tightly against the top of the window-casing, where the sash E rests on the sill, and hence necessitating frequent adjustment of the nut S.

T designates a cap or escutcheon arranged over the hook or eye Q of the adjusting-rod P and having a perforation U of a size and shape to admit of the passage of the chain, but prevent its turning. Said cap-plate is provided with laterally-extending perforations, lugs, or flanges V V to receive fasteningscrews, by means of which the said cap is secured to the top rail of the sash, as will be readily understood. The lower sash will in practice be provided with a sash-lock, as shown at X, and which may be of any suitable approved construction.

The operation of the invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. When the lower sash is raised, the upper sash will be lowered, and the sashes will balance each other, so as to be retained at any position to which they may be adjusted. In case there should be any difference between the weight of the sashes and one of them should have a tendency to drop, the lower sash may be secured by means of a sash-lock, and the sashes thus be maintained in position when adjusted. By using the connecting-chain instead of a cord the durability of the device is increased, and we avoid the annoyance which will be caused by stretching of the cord or by the wearing out of said cord. Any slight stretching or straining of the chain may be adjusted by means of the adjusting-nut S. The cap-plate or escutcheon T prevents the adjusting device from being displaced or injured by striking against the top of the window-frame, and it will finally be seen that the sash-pulley is entirely out of the way, so as not to interfere with the raising of either sash to the extreme top of the frame.

In Fig. 3 of the drawings we have illustrated a slightly-modified arrangement of the pulley, which is preferably employed when the invention is applied to old window-frames. This consists in simply making a mortise Y in the under side of the cap-piece of the window-frame sufficiently large to receive the casing of the pulley, which is inserted into the said mortise and secured by means of screws passing on the under side through its flanges. It will thus be seen that the casing of the pulley is flush with the top of the window-frame, so that the invention may be applied and operated in precisely the same manner as hereinbefore described.

In Fig. 5 of the drawings we have illustrated a slightly-modified method of attaching the end of the chain to the top rail of the lower sash. This consists in attaching to the last link of the chain by means of a small lap-ring Z, a plate *a*, having a corrugated or roughened front side and provided with a vertical slot *b*. This plate is attached directly to the front side of the top rail of the sash by means of a flat-headed screw *c*, which, by bearing against the roughened front side of the said plate, retains the latter securely in any position to which it may be adjusted, thus enabling the chain to be adjusted, as hereinbefore described. The plate *a* and the fastening-screw will be covered by a suitable ornamental escutcheon-plate *e*.

When our invention is to be applied to the sashes of very heavy or unusually large windows, we may find it desirable to duplicate the device, using a pulley and connecting-chain at or near each side of the sashes, as will be seen in Fig. 7 of the drawings. In such case we also prefer to provide the sashes with triangular braces *f*, arranged at the corners and secured by means of screws or fastening devices passing transversely through the side rails of the lower sash, as shown at *g*. The screw-threaded adjusting-rods P will be passed through the horizontal portion of the said rectangular braces, so as to relieve the top or meeting rail of the sash of unnecessary strain.

The advantages of the invention will be readily appreciated. It is simple, inexpensive, and may be applied to old as well as to new windows at a trifling expense compared with that of the balance-weights which are in customary use, and which are open to numerous objections, which are overcome by the use of our improved sash-balance.

Having thus described our invention, we claim and desire to secure by Letters Patent—

In a sash-balance, the combination, with the lower sash, a threaded rod passing loosely through a cross-rail thereof and having an eye in its upper end, an adjusting-nut on the lower end of said rod, and a flat chain connected at one end to said eye, of the upper sash, to which the other end of said chain is connected, and a suitably-grooved pulley journaled at the top of the window-frame and over which said chain passes, as and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

JESSE MARION SMITH.  
ROBERT MAXWELL WRIGHT.

Witnesses:

J. T. BRADY,  
M. J. MAULDIN.