No. 771,276. PATENTED OCT. 4, 1904.

W. SCHUCH.

SASH BALANCE.

APPLICATION FILED DEC. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

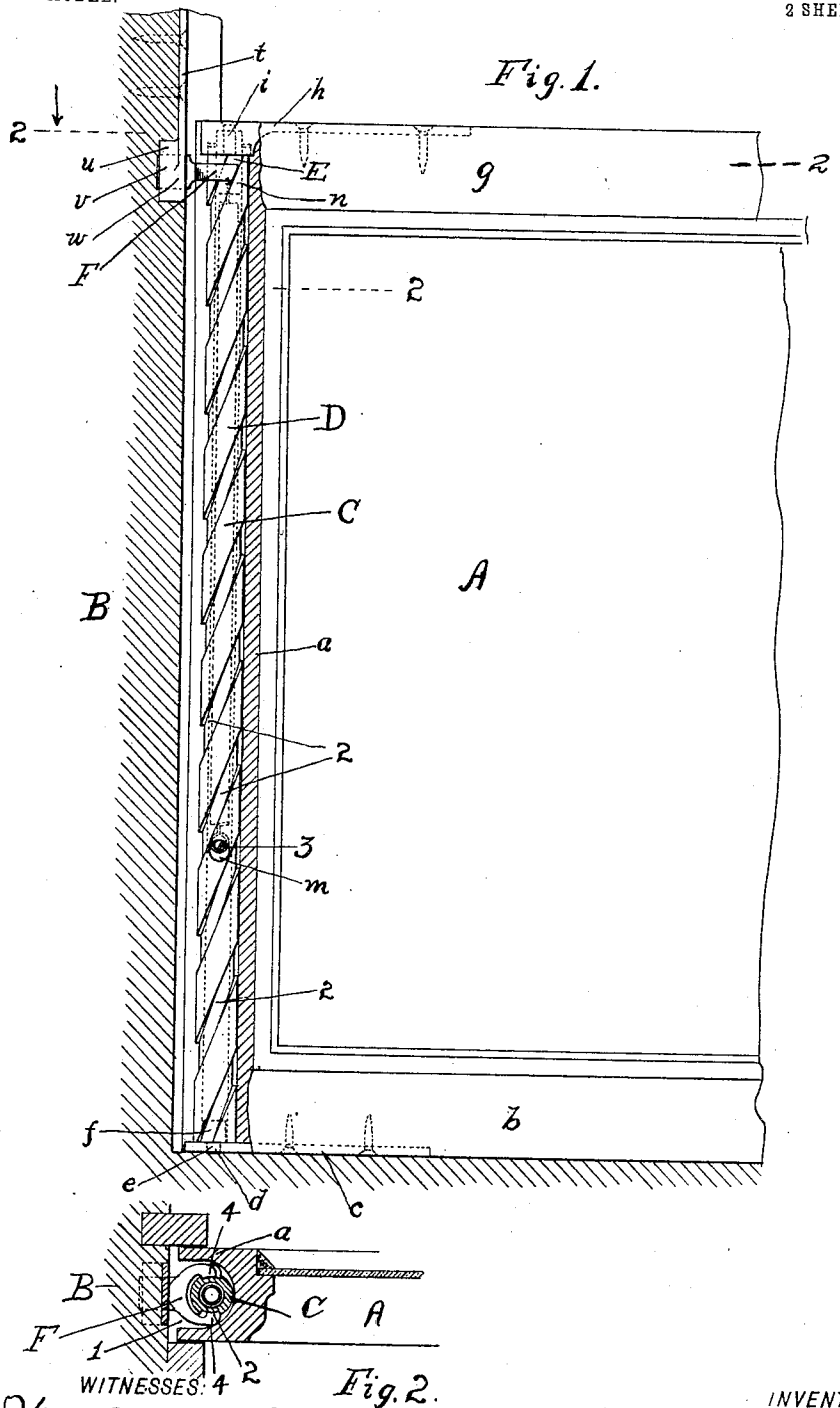


Fig. 2.

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Fig. 3.

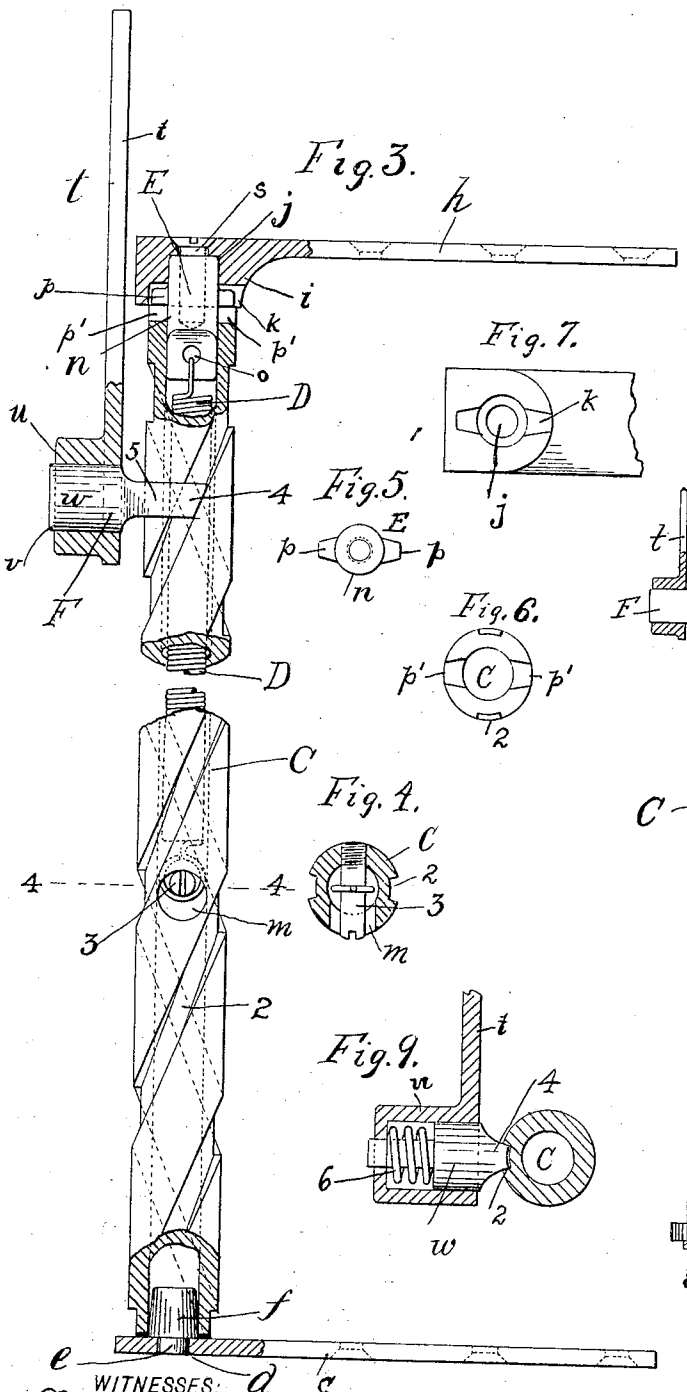


Fig. 7.

Fig. 8.

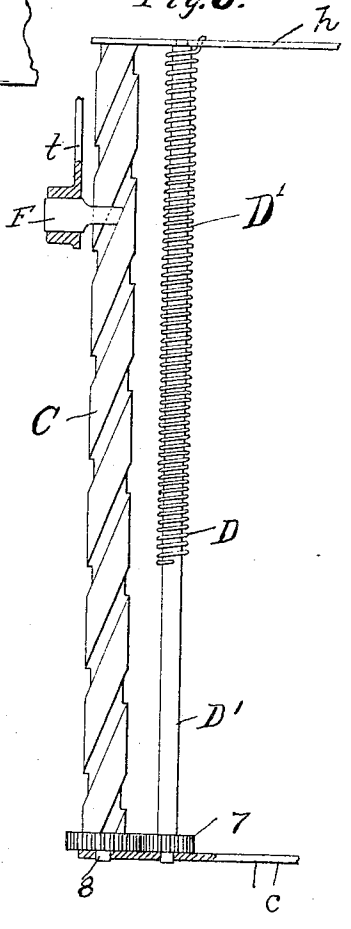


Fig. 5.

Fig. 6.

Fig. 4.

Fig. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM SCHUCH, OF WEST HOBOKEN, NEW JERSEY, ASSIGNOR TO JOSEPH SOSS AND CHARLES K. COLE, OF NEW YORK, N. Y.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 771,276, dated October 4, 1904.

Application filed December 23, 1903. Serial No. 186,273. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SCHUCH, a citizen of the United States of America, residing at West Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Sash-Balances, of which the following is a specification.

My invention has reference to improvements in sash-balances, and particularly to the type illustrated in my prior Letters Patent, Nos. 649,765 and 649,766, dated May 15, 1900; and it has for its object to simplify the construction of the several coöperating parts and to render the same more durable and easier of application, removal, and adjustment.

The nature of my invention will best be understood when described in connection with the accompanying drawings, in which—

Figure 1 represents an elevation of a portion of the lower sash, partly in section, together with a portion of the window-frame. Fig. 2 is a horizontal section on the line 2 2, Fig. 1. Fig. 3 is a vertical section, on an enlarged scale, illustrating the details of construction. Fig. 4 is a horizontal section on the line 4 4, Fig. 3. Fig. 5 is a plan or top view of the tension-regulating device for the balancing-spring. Fig. 6 is a top view of the screw element. Fig. 7 is a bottom view of the upper plate with part broken away. Fig. 8 is a sectional elevation of a modified form for the balance. Fig. 9 is a sectional plan or top view illustrating a modified form for the screw element and the engaging runner.

Similar letters and numerals of reference designate corresponding parts throughout the several views of the drawings.

Referring at present to Figs. 1 and 2 of the drawings, the letter A designates the lower sash of a window fitted to and guided by the window-framing B in a usual manner. One longitudinal member of the sash, as *a*, is provided with a vertical chamber 1, within which is mounted the screw element C, made tubular in form and provided on its exterior surface with a double screw-thread 2. Attached to the lower member *b* of the sash is a bottom plate *c*, provided with a socket *d*, arranged to fall in the line of the longitudinal axis of the screw element, Figs. 1 and 3, and adapted to receive a center *e*, projecting from a plug *f*, which is preferably made wedge shape and enters the lower end of the bore of the screw member. The screw element being forced upon the plug *f*, the latter turns with said element, together with the center *e* in the socket *d*. To the upper member *g* of the sash is attached a top plate *h*, provided with downwardly-projecting lug *i*, having therein a socket *j*, with two radial extensions *k*, Figs. 1 and 3. The length of the screw element C is made such that it fits neatly between the bottom plate *c* and the lug of the top plate *h*, so that it can turn freely during the movement of the sash in either direction. Within the tubular screw element is arranged a spiral spring D, having its lower end attached to a stud 3, screwed into one side of the screw element, and its other end passing through a slot *m* in said element, Figs. 1 and 4. The upper end of the spiral spring is placed in connection with a tension-adjusting device E. This consists of a hub *n*, adapted to fit into the tubular screw element C at the top thereof and provided with an eye *o*, to which the upper end of the spring D is attached, and said hub is provided intermediate of its ends with radial lugs *p*, adapted to enter into radial sockets *p'* in the top of the screw element as well as into the radial extensions *k* of the socket *j* in the top plate *h*. It will readily be understood that by turning the tension device the tension of the spring D can be adjusted as found necessary for the purpose and the position and tension of the spring maintained by depressing the tension device to cause the lugs *p* to enter the sockets *p'* in the top of the screw element, thus preventing retrograde motion of the tension device and the spring. The screw element and the spring under tension now form a unit in condition for use or application to the sash. When the screw element is applied to the sash, the tension device is lifted by means of a screw *s*, passing through the top plate and engaging an internal thread

in the tension device, so as to bring the radial lug *p* into the radial extensions *k* of the socket *j* in the top plate.

To the window-framing and opposite the vertical member *a* of the sash A is attached a vertical bracket *t*, provided with an inwardly-projecting hub *u*, provided with a central socket *v*, adapted to receive the journal *w* of the runner F. This runner is provided with teeth 4 4, adapted to engage with the threads of the screw element at diametrical points, said teeth being attached to or forming part of a forked arm 5.

The operation of my improved sash-balance is similar to that of the construction described in my prior patents above referred to, the runner F operating on the screw element to revolve the latter when the sash is raised or lowered. Since the spring D is fast to the sash at one end and at the other end to the screw element, the torsion thereof is increased when the sash is lowered, and so facilitates the opening of the sash when the latter is raised.

Instead of having the screw element provided with a double thread it may be provided with a single thread, as shown in Fig. 9, and in this case the runner F is provided with but a single tooth 4, engaging said thread, and the hub of the same is subjected to the action of a spring 6, located within the socket *v* of the bracket *t'*.

Instead of placing the spring D within the screw element C the same can be placed to one side thereof, as illustrated in Fig. 8. In this instance the screw element may be made solid, and the spring D is mounted on a vertical shaft D', it having its upper end attached to the top plate *h*, while its lower end is attached to said shaft. To the screw element C is rigidly affixed a gear-wheel 8, meshing with a gear-wheel 7, affixed to the shaft D' for imparting rotary movement to the latter. Of course the spring D could have one end affixed to the shaft D' and its other end affixed to the gear-wheel 7, which would then be mounted loosely upon the shaft D'.

It is of course to be understood that the balance may be applied to both vertical members of the sash and that the upper sash is correspondingly equipped with a balance.

What I claim as new is—

1. In combination with a sliding sash, of a tubular screw member extending in the vertical direction of the sash, a lower plate attached to the bottom member of the sash and provided with an interior bearing for the lower end of the screw member, an upper plate attached to the upper member of the sash and provided with a socket having radial extensions, a spring located within the tubular screw member and attached thereto at one end, a tension device having a hub entering the socket in the upper plate and the screw member and provided with lugs entering the extensions of the socket in the upper plate and having the other end of the spring attached thereto, means for attaching the tension device to the upper plate, and a runner affixed to the window-frame and engaging the screw element, substantially as described.

2. In combination with a sliding sash, of a tubular screw member extending in the vertical direction of the sash, a lower plate attached to the bottom member of the sash and provided with an interior bearing for the lower end of the screw member, an upper plate attached to the upper member of the sash and provided with a socket having radial extensions, a spring located within the tubular screw member and attached thereto at one end, a tension device having a hub entering the socket in the upper plate and the screw member and provided with lugs entering the extensions of the socket in the upper plate and having the other end of the spring attached thereto, means for attaching the tension device to the upper plate, and a runner affixed to the window-frame having a fork provided with teeth engaging the screw element, substantially as described.

3. In combination with a sash carrying a vertical screw element of a spring placed in connection with said screw element, and adapted to be placed under tension when the sash is lowered, and a runner journaled to the window-frame and provided with a fork having teeth engaging with the screw element from opposite sides, substantially as described.

4. In combination with a sash, a tubular screw element extending vertically, a top plate affixed to the upper member of the sash and provided with a socket and radial extensions, a spring located within the screw member and attached thereto at one end, and a tension device connected with the other end of the spring and provided with a hub fitted to the screw member and to the socket in the upper plate and having lugs entering the radial extensions in the upper plate, a stationary runner engaging with the tubular screw element and a screw for attaching the tension device to the upper plate, substantially as described.

5. The combination with a tubular screw element having a contained spring, of a tension device connected with said spring, means between the tension device and the corresponding end of the screw element for holding the tension device to said screw element, a top plate, means on said top plate for withdrawing the tension device from engagement with the screw element, means for locking said tension device to said top plate, and a runner engaging with the screw element, substantially as described.

6. The combination with a tubular screw element having a radial socket or sockets, of a spring located within said screw element, a tension device connected with said spring, and having a lug or lugs adapted to engage with

said socket or sockets for permanently retaining the said tension device, and a runner adapted to engage with the tubular screw element, substantially as described.

7. The combination with a screw element having a contained spring and provided with radial sockets, of a tension device connected with said spring and provided with lugs adapted to enter said sockets, a top plate provided with sockets adapted to receive the said lugs of the tension device and with means for drawing said lugs into said sockets and a runner engaging with the screw element, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM SCHUCH.

Witnesses:
A. FABER DU FAUR, Jr.,
JOSEPH SOSS.