J. SCHATER.

SASH-BALANCES.

No. 183,514. Patented Oct. 24, 1876.

Fig. 2

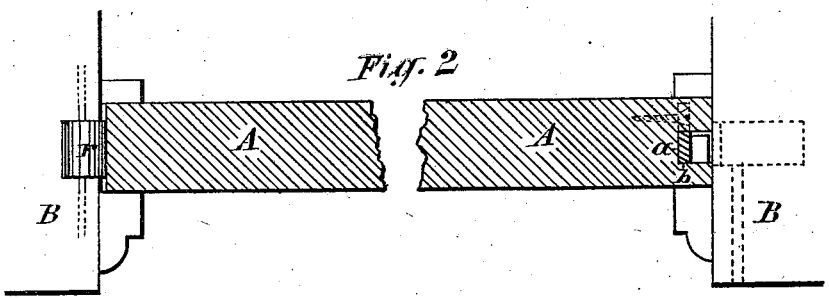


Fig. 1

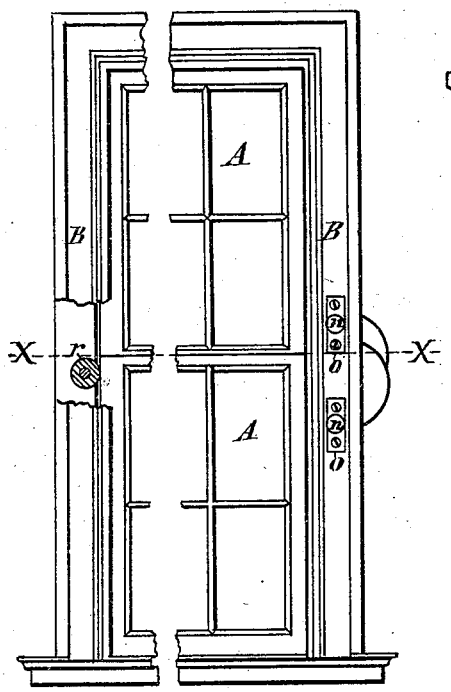


Fig. 3

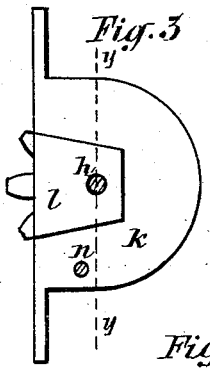


Fig. 4

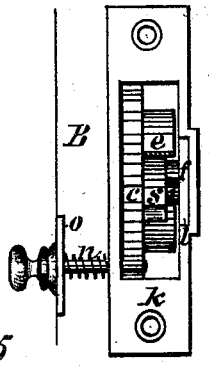


Fig. 5

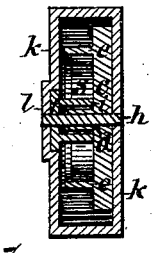


Fig. 6

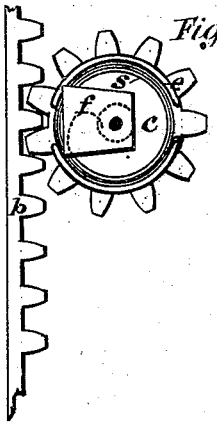


Fig. 7


WITNESSES:

C. Holmstrup, Jr.

J. C. Laass

INVENTOR:

Joseph Schater

per E. Laass Atty.

# UNITED STATES PATENT OFFICE.

JOSEPH SCHATER, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO PHILLIP SCHELLER, OF SAME PLACE.

## IMPROVEMENT IN SASH-BALANCES.

Specification forming part of Letters Patent No. **183,514**, dated October 24, 1876; application filed March 17, 1876.

*To all whom it may concern:*

Be it known that I, JOSEPH SCHATER, of Syracuse, in the county of Onondaga, in the State of New York, have invented a new and useful Improvement in Sash-Balances, of which the following, taken in connection with the accompanying drawing, is a full, clear, and exact description.

My invention relates to improvements in that class of sash-balances in which the sash is counterpoised by the action of a spring actuating a pinion engaging a rack in the side of the sash; and it consists in an improved construction and combination, with the pinion, of novel and simple devices for attaching the spring, by which improvements the pinion is braced and steadied in its movement, the width of its inclosing-case considerably diminished, and the attachment of the pinion thereto, and its removal therefrom for repairs, greatly facilitated, as will be hereinafter more fully described, and definitely claimed.

The invention is fully illustrated in the accompanying drawing, wherein Figure 1 is a front view of a window with my improvements applied. Fig. 2 is an enlarged transverse section on line *x x*, in Fig. 1; and Figs. 3, 4, 5, 6, and 7 are enlarged detail views.

Similar letters of reference indicate corresponding parts.

A A represent the upper and lower sash of a window; B, the window-casing. The sash is provided on one or both sides with a groove, *a*, in which is attached a rack, *b*, extending the entire height of the sash. *c* is a toothed pinion engaging the said rack. To one side of the pinion is rigidly attached a projecting hollow hub, *d*, and an annular flange, *e*, of the same height, and forming a case for the coil-spring *s*, the outer end of which is hooked into an opening or slot in the annular flange *e*, and the inner end is hooked into and held by a slot in the collar *i*. This collar (best seen in Fig. 7, which is a view from the under side) is fitted loosely to the hub *d* and attached to a plate, *f*, which has a hole in the center of the collar for the pin *h*. *k* is a case, having its two parallel sides a proper distance apart, to contain and steady the pinion *c*, with its annular flange *e*. One side of the case *k* is provided on the interior with a recess, *l*, into which is fitted the plate *f* on the hub *d* aforesaid, and thereby prevented from turning.

The recess *l* and plate *f* are slightly tapered inward, to admit of a ready insertion and withdrawal of the plate *f*. The pinion, with its spring, is attached to the case *k* by inserting it through the open side of the case and passing the pin *h* through the case, plate *f*, hub *d*, and pinion *c*, as best seen in Fig. 5 of the drawing, which is a section on line *y y* in Fig. 3.

Before connecting the rack with the pinion, the spring *s* is wound up to the proper tension, and retained in that position by inserting the pin *n*, which passes through a plate, *o*, attached to the outside of the window-casing, and through the said casing and case *k* at a point to bring it between two teeth of the pinion.

The outer end of the pin *n* is provided with a knob or suitable handle, by which it is forced in or out. When forced inward, the pin prevents the pinion *c* from turning, and thus locks the sash at any height or point. By drawing it outward, it releases the pinion and allows the sash to be moved up or down. *r* is friction-roller placed in the window-frame, opposite the spring-balance before described, to prevent the sash from binding on the casing.

On heavy windows the rack and pinion are to be applied on both sides and the friction-rollers may be dispensed with.

I am aware that the rack and spring-pinion have been employed in sash-balances before this, and I therefore do not claim the same, broadly.

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

The combination of the pinion *c*, provided with hollow hub *d*, and annular flange *e*, coil-spring *s*, placed within and attached at the outer end to said flange, collar *i*, holding inner end of the spring, plate *f* attached to col-

lar *i*, case *k*, having recess *l* and pin *h*, all constructed and arranged as described and shown, in combination with the rack *b* and spring-pin *n*, as and for the purpose set forth.

In testimony whereof I have signed my name and affixed my seal in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga and State of New York, this 14th day of March, 1876.

JOSEPH SCHATER. [L. S.]

Witnesses:

JON. CURT. A. LIMA,

C. HOLMSTRUP, Jr.