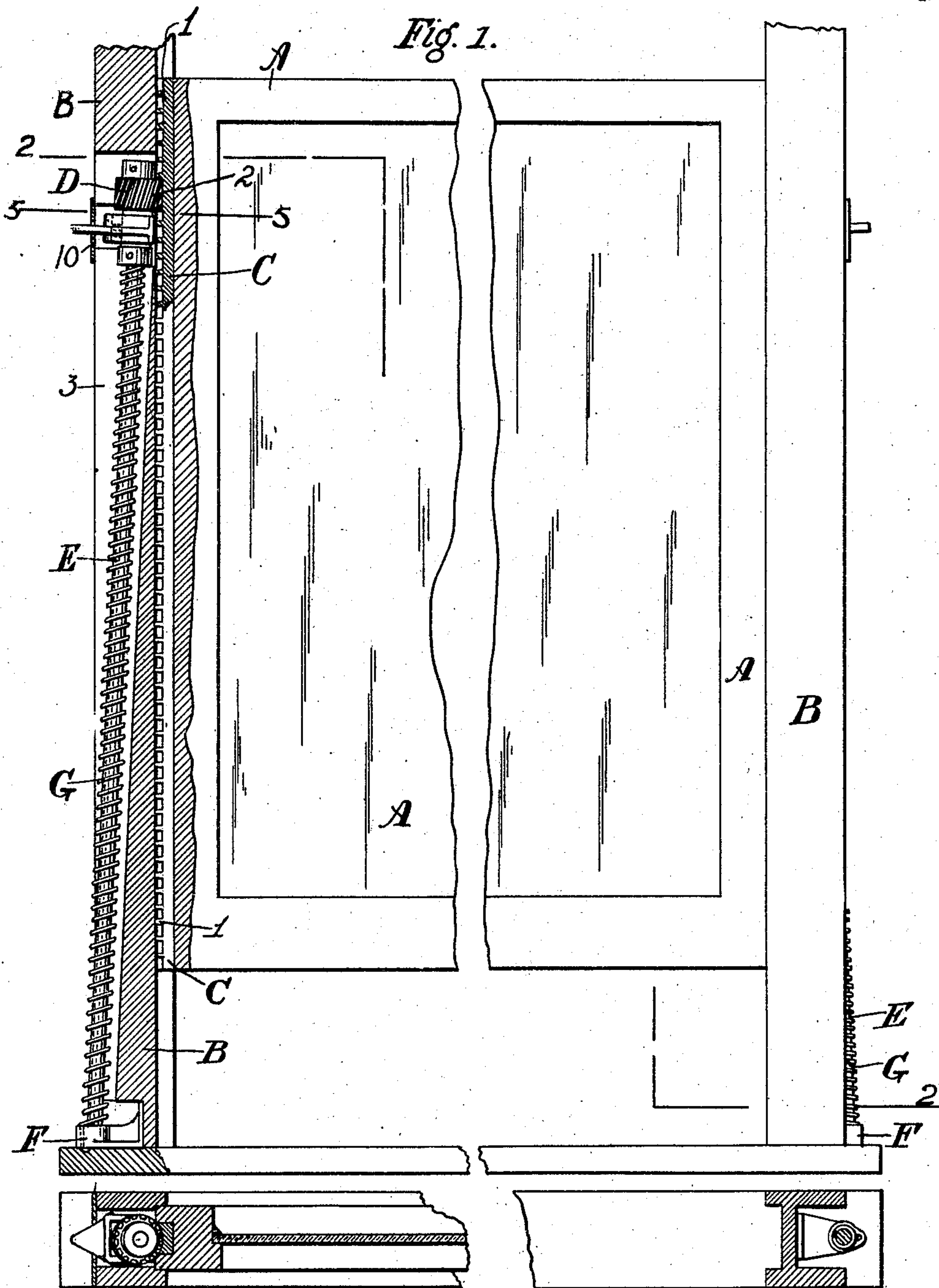


No. 785,334.

PATENTED MAR. 21, 1905.

J. SOSS.
SASH BALANCE.
APPLICATION FILED MAY 17, 1904.

2 SHEETS—SHEET 1.



WITNESSES:
Chas. W. Thomas
Rena N. Judigky

Fig. 2.

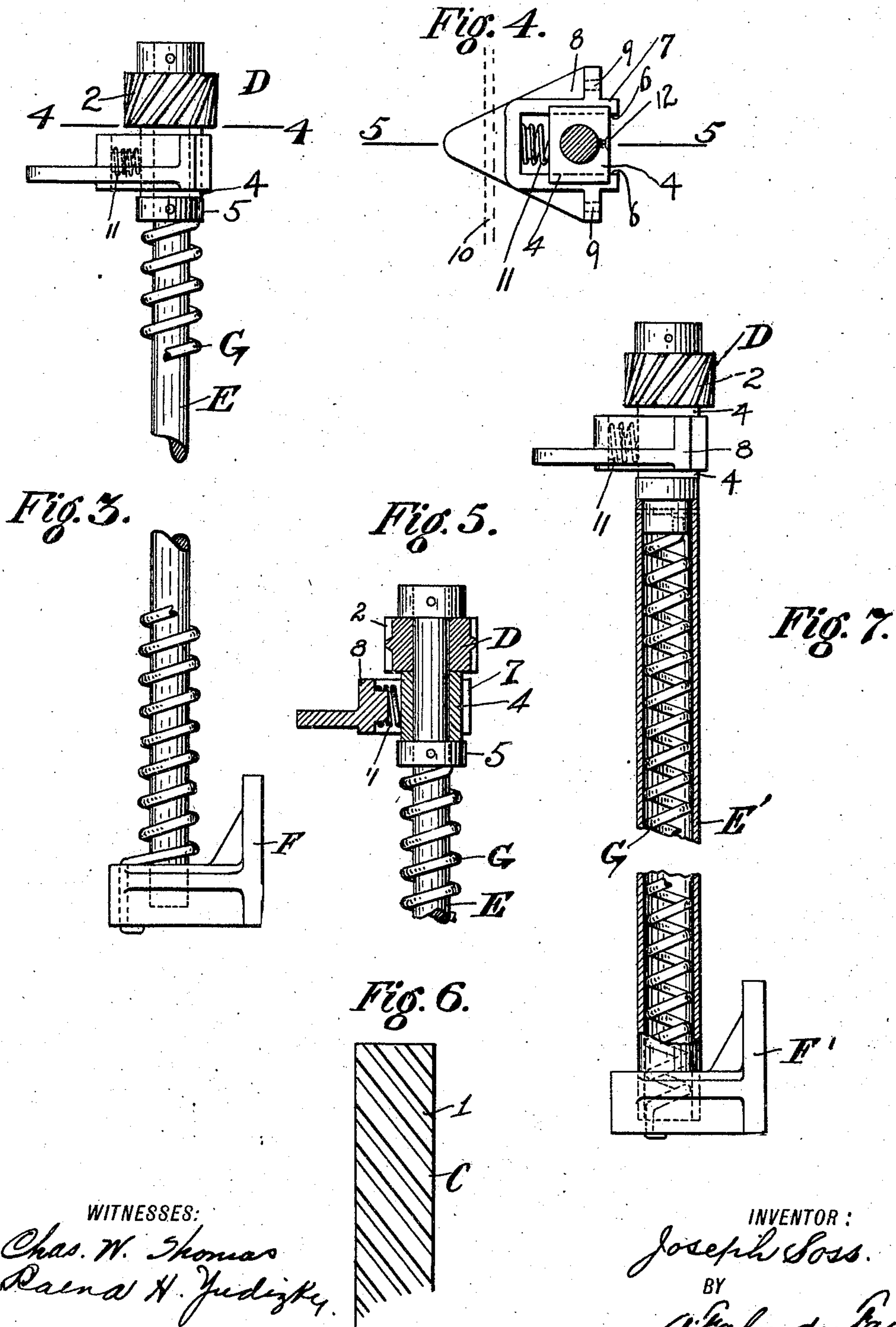
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UNITED STATES PATENT OFFICE.

JOSEPH SOSS, OF NEW YORK, N. Y.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 785,334, dated March 21, 1905.

Application filed May 17, 1904. Serial No. 208,412.

To all whom it may concern:

Be it known that I, JOSEPH SOSS, a citizen of the United States of America, residing at New York city, in the county of New York and State of New York, 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 that class in which the lowering of the sash winds up a helical or like spring, thereby creating a certain lifting potential, which assists in raising the sash.

The object of my invention is to simplify the construction of the parts and to provide improved means for transmitting the movement of the sash to the spring.

To this end my invention consists, essentially, in the combination, with a sliding sash, of a rack with oblique teeth attached to the sash, an oblique toothed gear-wheel meshing into said rack, a shaft having suitable bearings in the window-frame and upon which said gear-wheel is mounted, a spring coiled on said shaft and attached to the same and to a stationary part, and means for yieldably pressing the gear-wheel against the rack.

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

Figure 1 represents an elevation, partly in section and part broken away, of a window embodying my invention. Fig. 2 is a horizontal section on the line 2 2, Fig. 1. Fig. 3 is a front elevation, with part broken away, of the operating parts in the window-frame drawn on a larger scale than the preceding figures. Fig. 4 is a section on the line 4 4, Fig. 3. Fig. 5 is a section on the line 5 5, Fig. 4. Fig. 6 is a face view of a portion of the rack. Fig. 7 illustrates an elevation, partly in section, of a modified manner of mounting the spring.

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

Referring now to Fig. 1, the letter A designates the lower sash of a window fitted to and guided by the window-framing B in a usual manner. To each longitudinal side of

the sash on the face adjacent to and facing the window-frame is secured a metallic rack C, having thereon inclined teeth 1 of a pitch preferably less than forty-five degrees. These racks C are engaged by gear-wheels D D, having teeth 2, corresponding to the pitch of those of the rack, and consequently when the sash is raised or lowered the gear-wheels are caused to rotate. Referring now to Figs. 1 to 5, each gear-wheel D is rigidly mounted upon a shaft E, located within a suitable recess 3 in the window-framing B and extending in a vertical direction, its lower end being loosely mounted in a socket in a foot F, so that it can swing toward and from the sash A, or, if desired, it may be pivoted in a usual manner. The upper end of the shaft is adjustably secured as follows: On the shaft is mounted a box 4, in which the former turns loosely, and said box is held from sliding in the longitudinal direction of the shaft by the gear-wheel D above and by a collar 5 below. The box is provided with transverse ways 6, into which enter the guides 7 of a yoke 8, which straddles the box and is secured to the window-framing B at 9 9. It can also be additionally secured by a plate 10, Figs. 1 and 4, which straddles the reduced top of the yoke and is screwed to the window-framing.

Between the box 4 and the yoke is placed a usual spiral spring 11, which by its action on the box constantly forces the gear-wheel D against the rack C with a yielding action. Around the rod E is coiled a helical spring G, the lower end of which is secured to the foot-piece F, while its upper end is attached to the collar 5. When the shaft E is turned in one direction; the spring G is wound up, and this takes place when the sash A is lowered, thus storing up energy which is again expended in the raising of the sash.

It being necessary that the spring G have some initial tension, which must be maintained until the gear-wheel D is dropped into engagement with the rack C, I provide means, such as the set-screw 12, for holding the box 4 to the shaft E after the spring G is wound to the proper tension. As the box cannot turn in the yoke 8, the shaft is held from rotating under the action of the spring. When

the device is applied, the set-screw 12 is unscrewed to release the shaft while the rack C and gear-wheel D are in engagement. It is of course to be understood that the shaft E
5 may be set vertically; but I find a smoother action is obtained by inclining it. By having the gear-wheel and rack in yielding engagement breakage of teeth is avoided, also looseness or binding in running, due to shrinking
10 or swelling of the wood, and smoother running is insured.

In the modification illustrated in Fig. 7 I have shown the spring G inclosed in a tubular casing E', which forms the shaft. Otherwise
15 the construction is substantially the same as before.

I do not herein broadly claim a rack and wheel for windows or a tension-spring in connection with means for winding up the same,
20 as these are old and well known.

What I claim as new is—

1. The combination with a sliding sash, of a rack with oblique teeth attached to said sash, a gear-wheel meshing into said rack, a shaft
25 having suitable bearings and upon which shaft the gear-wheel is mounted, a tension-spring in connection with said shaft, and means for yieldably pressing the gear-wheel and rack together.

30 2. The combination with a sliding sash, of a rack with oblique teeth attached to said sash, a gear-wheel meshing into said rack, a swinging shaft having suitable bearings and upon which shaft the gear-wheel is mounted, a ten-

sion-spring in connection with said shaft, and
35 means for yieldably pressing the gear-wheel and rack together.

3. The combination with a sliding sash, of a rack with oblique teeth attached to said sash, a gear-wheel meshing into said rack, a shaft
40 having its lower end pivotally mounted, a movable spring-pressed box supporting the upper end, means for guiding and holding the box, and a spring in connection with said shaft.

4. The combination with a sliding sash, of
45 a rack with oblique teeth attached to said sash, a gear-wheel meshing into said rack; a shaft having its lower end pivotally mounted, a movable spring-pressed box supporting the upper end, means for guiding and holding the box,
50 a spring in connection with said shaft, and means for locking the shaft against turning.

5. The combination with a sliding sash, of a rack with oblique teeth attached to said sash, a gear-wheel meshing into said rack, a shaft
55 having its lower end pivotally mounted, a movable spring-pressed box supporting the upper end, means for guiding and holding the box, a spring in connection with said shaft, and a set-screw passing through the box and engag-
60 ing the shaft for locking the two together.

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

JOSEPH SOSS.

Witnesses:

A. FABER DU FAUR, Jr.,
RAENA H. YUDIZKY.