(No Model.)

C. TEGEN.

SASH BALANCE.

No. 359,108. Patented Mar. 8, 1887.

Fig. 1.

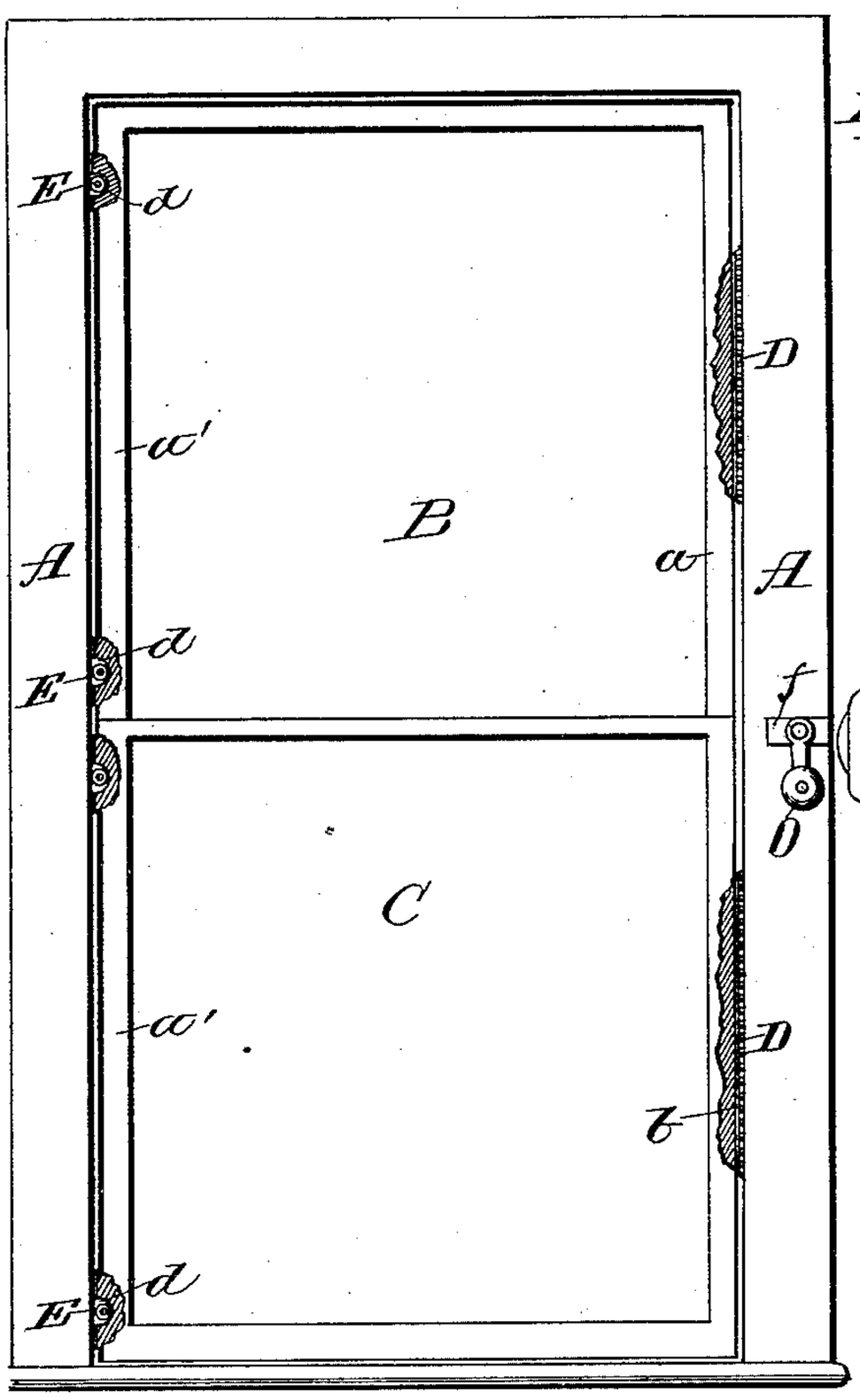


Fig. 2.

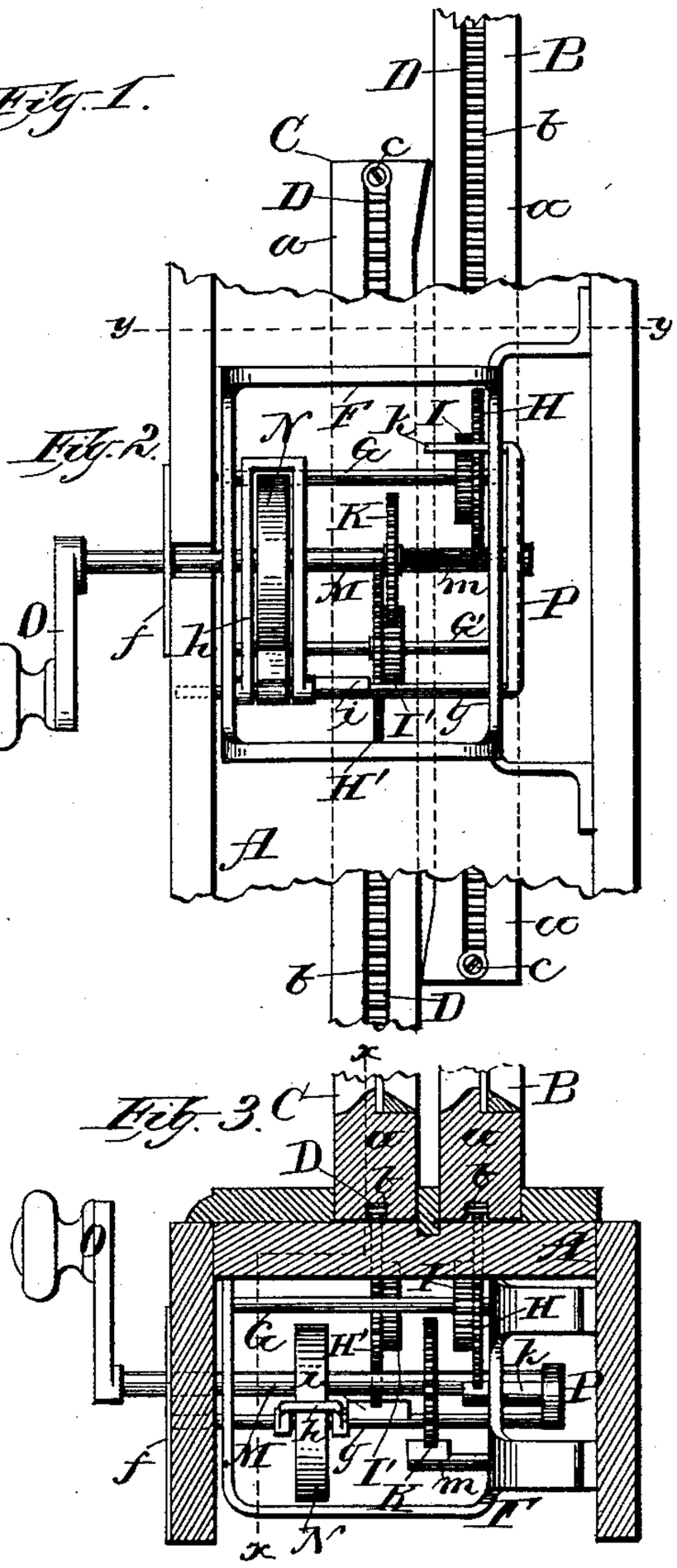
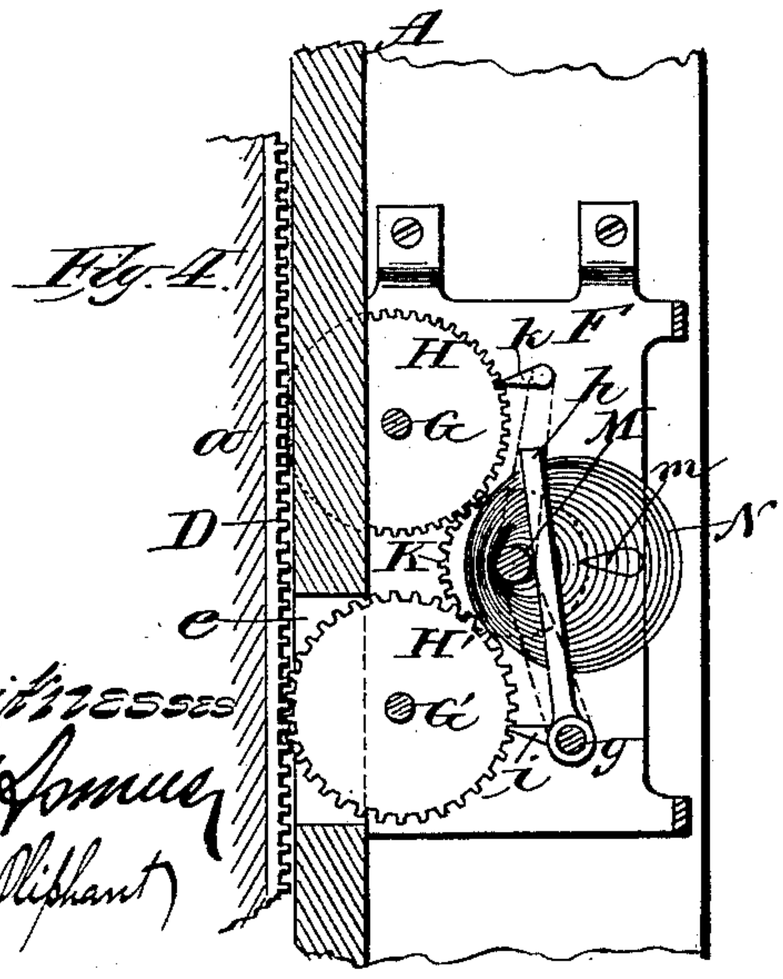


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

CHRIST TEGEN, OF MANITOWOC, WISCONSIN.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 359,108, dated March 8, 1887.

Application filed October 8, 1886. Serial No. 215,645. (No model.)

To all whom it may concern:

Be it known that I, CHRIST TEGEN, of Manitowoc, in the county of Manitowoc, and in the State of Wisconsin, have invented certain new and useful Improvements in Window Sash and Blind Operators; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to window sash and blind operators; and it consists in certain claimed peculiarities of construction, as will be hereinafter described with reference to the accompanying drawings, in which—

Figure 1 represents a front elevation of a window having my invention applied thereto; Fig. 2, a partial side view of the same; Fig. 3, a transverse section on line *y y*, Fig. 2; and Fig. 4, a vertical section on line *x x*, Fig. 3.

Referring by letter to the drawings, A represents a window-frame, and B C the respective upper and lower sliding sashes. Each sash has one of its stiles, *a*, provided with a groove, *b*, to receive a rack, D, that is secured in place by screws *c* or other suitable means. The other stile, *a'*, of each sash is provided with suitable recesses, *d*, in which operate anti-friction wheels E, that bear against the adjacent face of the casing, as shown by Fig. 1.

Secured within the casing A, at one side of the window, is a frame, F, provided with bearings for shafts G G', the latter having respectively keyed thereto pinions H H', that extend through suitable apertures, *e*, in said casing to mesh with the racks D, attached to the upper and lower sashes. Forming part of the pinions H H', or independently keyed to the shafts G G', are other pinions, I I', of less diameter than those of the former, and designed to be engaged with a spur-wheel, K, keyed on a sliding shaft, M, the latter having its bearings in the frame F and a plate, *f*, that is secured to the inner side of the casing A, this casing being suitably perforated to permit the passage and play of said shaft. The sliding shaft M forms an arbor for a coil-spring, N, and is provided at its inner end with a crank, O, while its outer end has secured thereto an angle-piece, P. The lower arm, *g*, of the angle-piece P has fastened thereto the outer end of the spring N and a link, *h*, that limits the expansion of the latter, and said part *g* slides in suitable perforations in the sides of frame F, the casing A being also perforated to receive its inner end, as shown by dotted lines, Figs. 2 and 3. A lug, *i*, projects from the arm *g* of the angle-piece, and is brought in and out of engagement with the rack-pinion H', according to the movement of the sliding shaft, thus forming a stop for said pinion, while at the same time the upper or short arm, *k*, of this angle-piece is constructed and arranged to come in and out of engagement with and act as a stop for the rack-pinion H.

A stationary stop, *m*, projects from one side of the frame F, and is designed to engage the spur-wheel K on the shaft M at such times as the stops *i k* may be in engagement with the respective rack-pinions H H', thereby preventing the unwinding of the spring N, as such operation would cause a free rotation of the shaft M and its crank O and interfere with the effectiveness of my device.

In the operation of my invention, supposing both sashes to be in their normal positions and it is desired to raise the one C, the sliding shaft M is drawn toward the operator, so as to bring the spur-wheel K into engagement with the pinion I' and disengage the lug or stop *i* with the rack-pinion H', as shown by Fig. 2. The crank O is now operated to actuate the rack-and-pinion gear above described, and thereby causes the sash C to rise, the spring N expanding to balance such movement, and when this sash has been sufficiently raised the shaft M is pushed in to bring the stop *i* into engagement with the rack-pinion H', to lock said sash in its new position. To lower the sash B, the shaft M is pushed away from the operator to disengage the stop *k* from the rack-pinion H and at the same time bring the spur-wheel K into engagement with the pinion I, when by operating the crank O the desired movement of said upper sash is effected, the spring N contracting as such movement takes place.

The expansive force of the spring N is always with the upward movement of both sashes, to compensate for their specific gravity; but

when either of the sashes are lowered this spring contracts to retard their fall, and thus by its employment acts as a balance for said sashes, the anti-friction wheels E also aiding the latter in their operation.

Although I have described and shown the shafts G G′ as provided with pinions I I′ of less diameter than the rack-pinions, it is obvious that I may omit said parts I I′ and make the spur-wheel K of such diameter as to directly engage the said rack-pinions without departing from my invention, such construction being practical, but not regarded as equally effective and certain in its operation.

While I have described my invention more particularly with relation to window-sash, the same is equally applicable to sliding blinds, and by its employment renders such devices more easy to operate, and at the same time locks them securely in any position to which they may be adjusted. My invention is equally applicable to one or more sashes or blinds, it being only necessary to multiply the gear and pinion stops to thus accommodate the device to more than two such sliding parts, as illustrated in the drawings.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with two or more sliding sashes or blinds, each having a stile thereof provided with a rack, of an operating mechanism secured to the sash or blind casing, and consisting of a suitable frame, a sliding shaft having its bearings in the frame and carrying a spur-wheel, one end of said shaft being provided with a crank and the other with an angle-piece having its upper and lower arms operative in suitable perforations in the frame, non-sliding shafts journaled in said frame, and having keyed thereto pinions that mesh with the sash or blind racks, other pinions arranged to engage the spur-wheel, a balance-spring having its arbor on the sliding shaft, and a stop for the spur-wheel, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

CHRIST TEGEN.

Witnesses:

H. G. UNDERWOOD,

N. E. OLIPHANT.