

(No Model.)

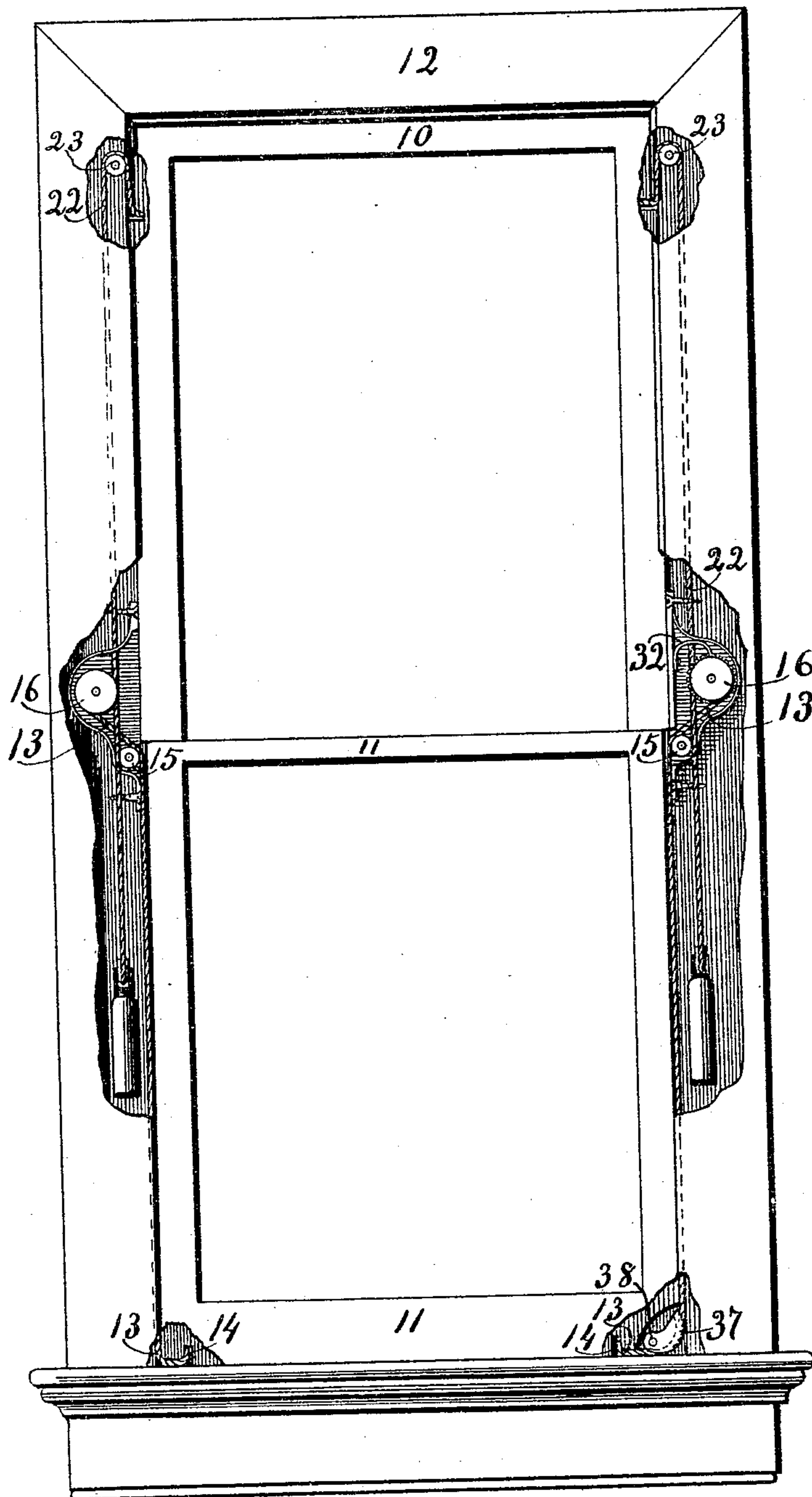
2 Sheets—Sheet 1.

N. NEILEN.  
SASH BALANCE.

No. 543,500.

Patented July 30, 1895.

Fig 1.



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Fig II.

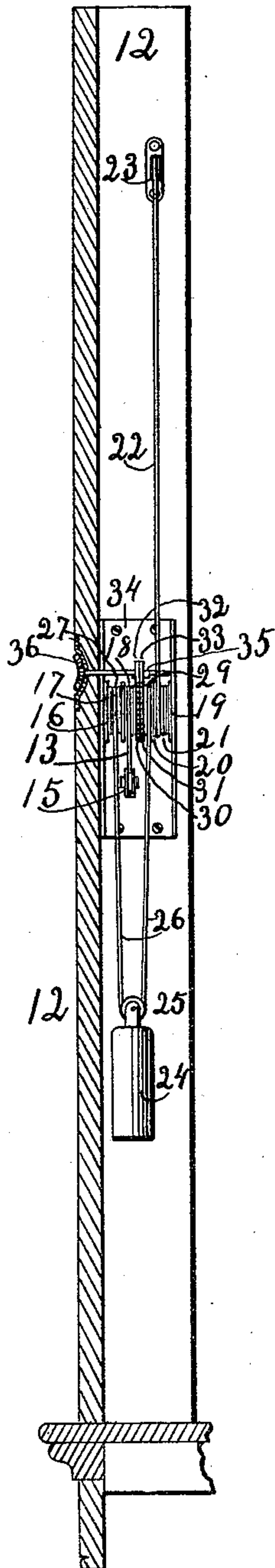


Fig III.

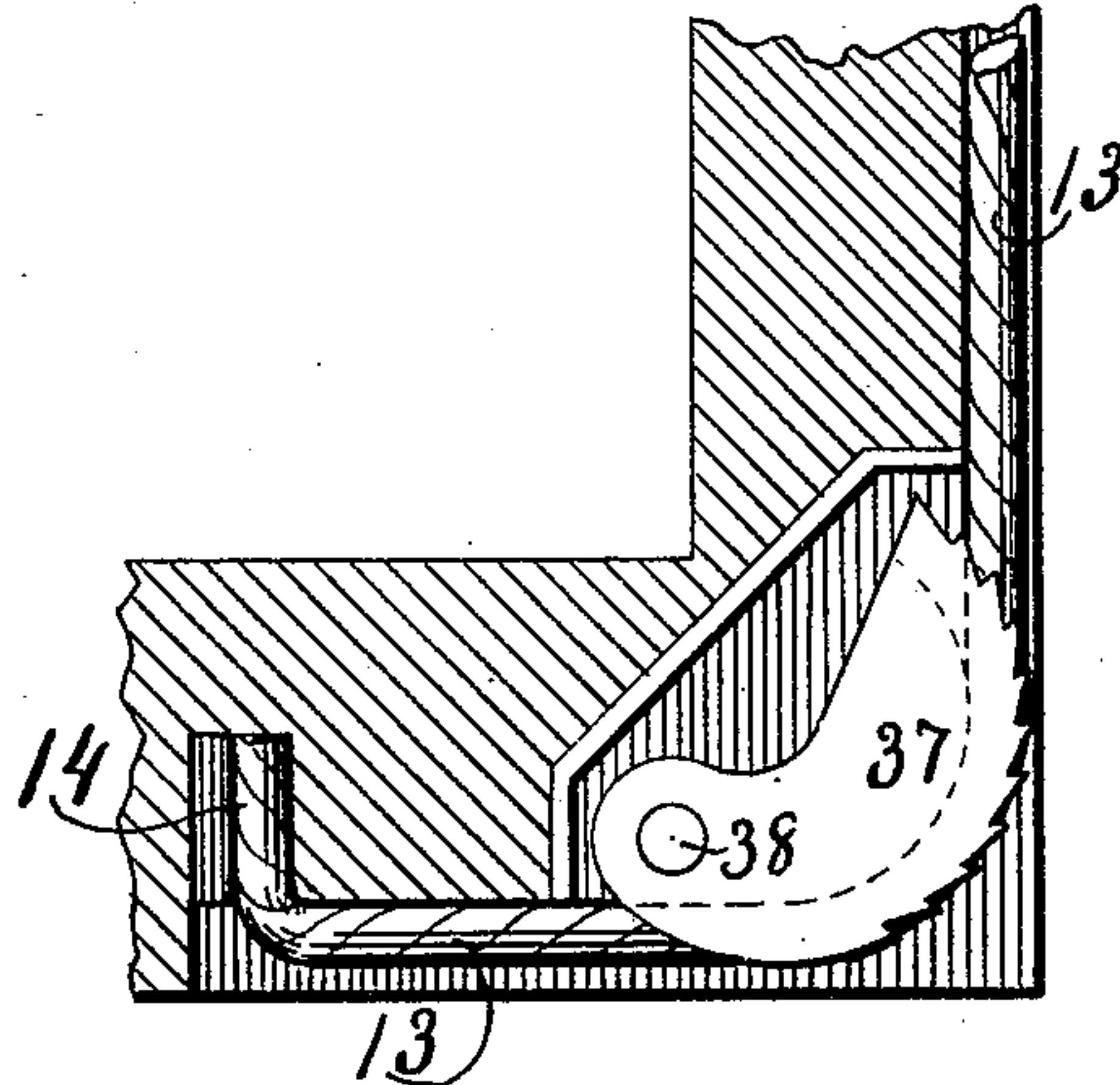


Fig IV.

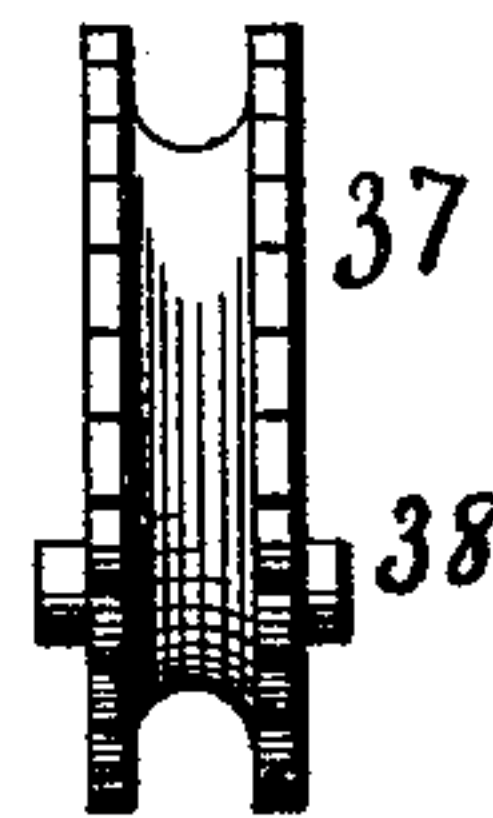
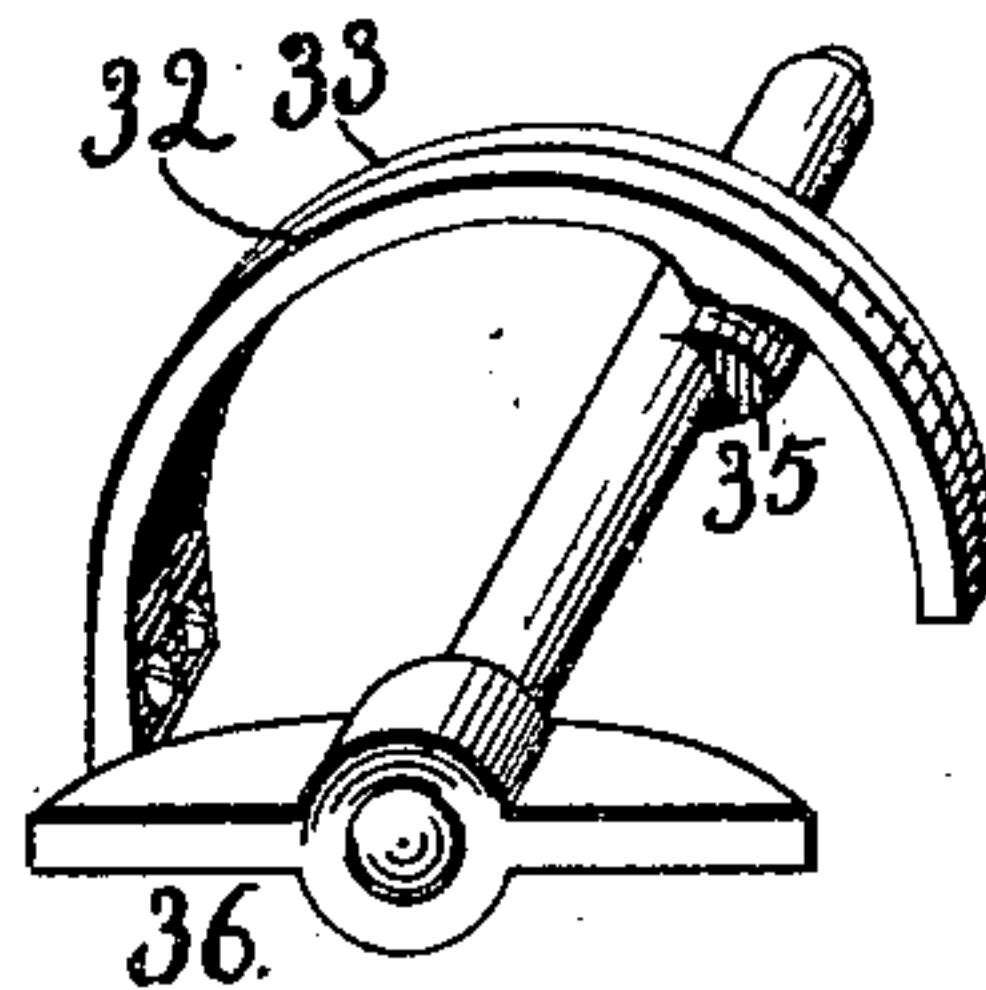


Fig V.



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# UNITED STATES PATENT OFFICE.

NELS NEILEN, OF SIOUX CITY, IOWA.

## SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 543,500, dated July 30, 1895.

Application filed November 23, 1894. Serial No. 529,740. (No model.)

*To all whom it may concern:*

Be it known that I, NELS NEILEN, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented a new and useful Improvement in Sash Balances and Locks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure I is a front view of a window with portions of the sash and frame broken away to expose the interior works. Fig. II is a vertical section at the line *x* of Fig. I, showing some portions in elevation. Figs. III and IV are detail views of the locking-cam. Fig. V is an enlarged detail view of the key and detents.

Heretofore the cord which is used to balance the lower sash has been exposed to view above the sash when in its normal position with the window closed, and one object of this invention is to conceal that cord to give a neater and more finished appearance to the window.

Another object of the invention is to lock both the upper and lower sashes either in their normal closed position or when open to any extent required.

To this end my invention consists in the construction and combination of parts forming a sash balance and lock more fully hereinafter described and claimed, reference being had to the accompanying drawings.

10 represents the upper sash, 11 the lower sash, and 12 the frame or casing of the window.

The sash 11 is grooved in its edges and a short distance beneath the lower corner to receive a cord 13, one end of which is permanently secured to the sash at 14. Thence the cord passes up the said groove to a pulley 15 which is journaled in a socket 34 secured in the frame 12. Over this pulley the cord passes to a spool 16, which is also journaled in the frame, and is provided with two end flanges and a central flange 17, the latter parting the spool into two grooves, in one of which 18 the other end of the cord 13 is secured. 19 represents another spool journaled upon the same shaft as the spool 16 and having a similar central flange 20 parting it in two grooves, in one of which 21 is secured the end of a sash-cord 22 which passes up over a pulley 23 which is journaled in the frame. The end of the

cord 22, passing downward from the pulley 23, is secured to the upper sash 10. 24 is the balance-weight for both sashes. It is provided with a pulley 25, which hangs in the bight of a cord 26, one end of which cord is secured to the spool 16 to wind thereon in the compartment 27, and the other end of which is secured to the spool 19 to wind therein in the compartment 29. The adjacent flanges 30 and 31 of the two spools are notched to form ratchet-wheels.

32 is a detent secured to the frame or to the socket 34, in which the spool and the adjacent parts are mounted. The pawl 32 may be a spring or it may be pivoted in the said socket with its free end adapted to normally engage the ratchet-wheel 30. 33 is another detent similarly hung to engage the ratchet-wheel 31. When in engagement these detents prevent the two spools from revolving in either direction.

35 is a key journaled beneath the detents in the socket 34 and provided with a knob or thumb-lever head 36, located in a suitable socket outside of the casing 12. If this lever be turned one way it lifts the detents out of engagement with the ratchet-wheel, and permits the spools to be revolved in either direction, but if it be turned across the other way the detents are permitted to engage the ratchet-wheels and hold the spools from revolving either way.

37 is a cam pivoted at 38 to the lower sash above the cord 13 and grooved in its periphery to permit the cord to pass through it. The free end of the cam 37 is adapted to gravitate into engagement with the side casing 12, but so long as the weight 24 is permitted to rotate the spool 16 the cord 13 will be drawn upon and hold the cam out of engagement with the frame.

The operation is as follows: By turning the key 36 and disengaging the detents 32 and 33 the spools will be set free to revolve, and then if the lower sash be raised the weight 24 will wind the cord 13 upon the spool 16 and balance the sash. Now, if the key be turned to release the detents, they will engage the spools so that they cannot turn, and the cord 13 being thus held will hold the lower sash from descending, and if an attempt is made to raise the lower sash a very little move-



ment of it will loosen the cord 13, which is not now strained by the weight, and permit the cam 37 to fall into engagement with the side frame, when it will be impossible to raise the sash farther. The adjustment of the cam 37 and cord 13 may be such that the sash cannot be raised more than half an inch before the cam will stop it. Relative to the upper sash, when the detent 33 is raised by the key 36 the spool 19 will be free to revolve, so that the sash may be lowered, the weight 24 serving as a balance thereto; but if the key 36 be turned the other way, permitting the detent to fall into engagement with the ratchet 31, the cord 22 cannot further unwind, and the sash will be held from opening farther. This full device may be duplicated at the opposite side of the window, but as one lock is sufficient the ratchet-wheels, detents, and key may be dispensed with. The cord 13, connected with the lower sash, passes through the casing over the pulley at 15, so that this cord is never in sight, and the cord 22, passing into the casing over the pulley 23, is never in sight except when the upper sash is lowered. The lower sash being locked by the automatic action of the cam 37, whenever an attempt is made to raise it without first turning the key to unlock it and the key being located at the side of the middle of the window entirely beyond reach of a person outside of the window, this device becomes so near burglar-proof that it cannot be improperly operated without breaking it or the window, and the balancing-weights 24 may be so adjusted, weight for weight, relative to the sashes as to support the sashes entirely or partially, as may be desired.

The detents 32 and 32 may be made of spring material and be hung to normally engage the ratchet-wheel, or the detents may be pivoted to gravitate into engagement, and any antifric-

tion device may be substituted for the pulleys 15 and 23 as guideways for the cords 13 and 22, respectively, without departing from the spirit of my invention.

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

1. The combination in a sash balance and lock, of two spools journaled in the window frame, one cord secured at one end to one spool and at the other end to the lower sash, another cord secured at one end to the other spool and at the other end to the upper sash, and a third cord secured at one end to one spool and at the other end to the other spool and a balance weight hung in the bight of this third cord, substantially as described.

2. The combination of a lower sash; a cord secured beneath a corner thereof and passing up by its edge; a cam hung above the cord in the sash to engage the frame, a balance weight upon the cord and means for stopping the same, substantially as described whereby the cord when pulled holds the cam disengaged from the frame and the same cord when stopped permits the cam to engage the same.

3. The combination of a sash, a frame therefor; a spool journaled in the frame and having a ratchet wheel; a detent for said ratchet wheel, a key for the detent, a weight hung by a cord to the spool; another cord secured at one end below a corner of the sash and at the other end secured to the said spool, and a cam hung in the said corner of the sash above the adjacent cord and adapted to engage the frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

NELS NEILEN.

Witnesses:

ALFRED LARSON,  
CHAS. A. BRYAN.