No. 804,620. PATENTED NOV. 14, 1905.

T. PACHALI, Sr.

WINDOW SASH BALANCE AND LOCK.

APPLICATION FILED MAY 31, 1905.

Fig. 1.

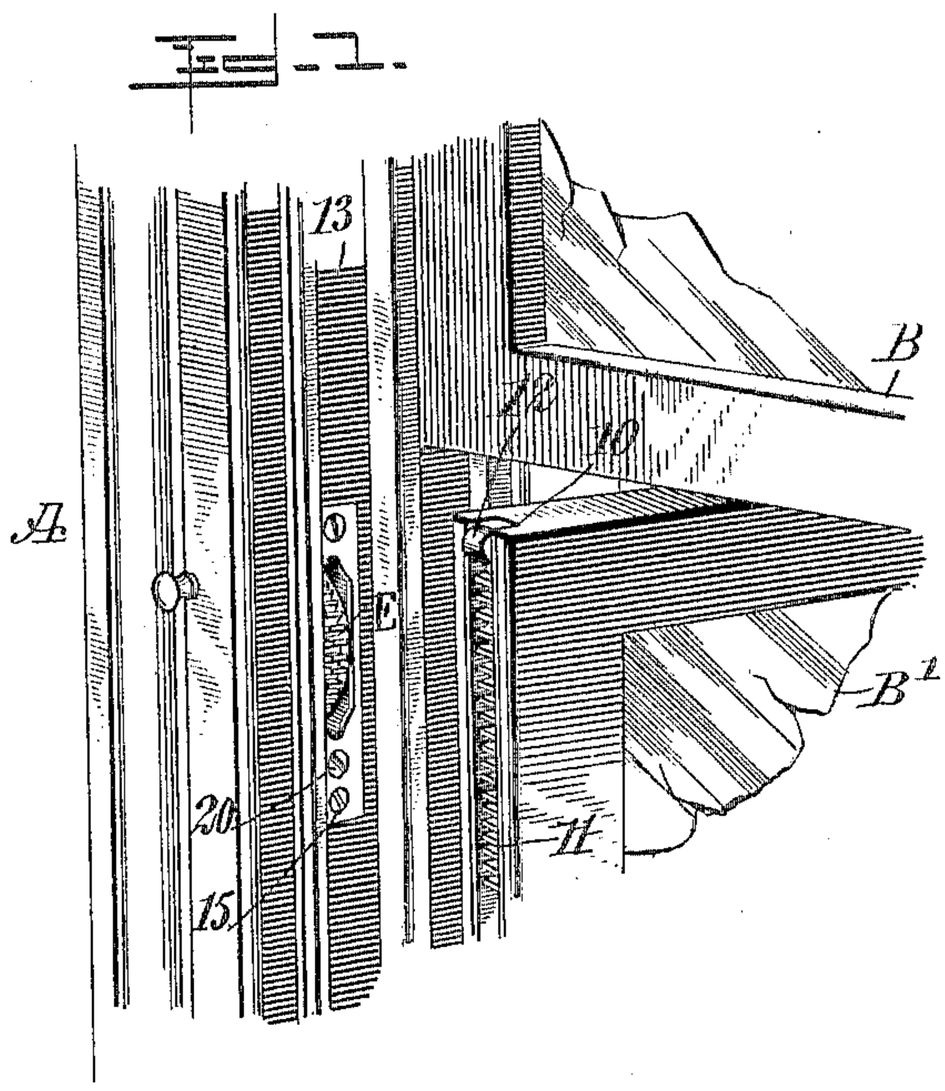

Fig. 4.

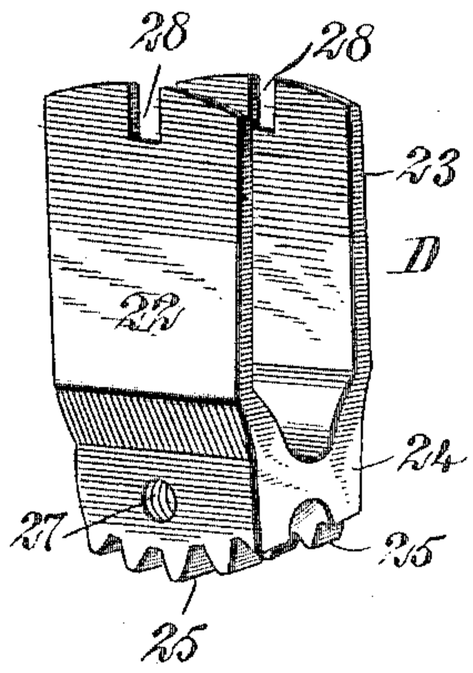

Fig. 2.

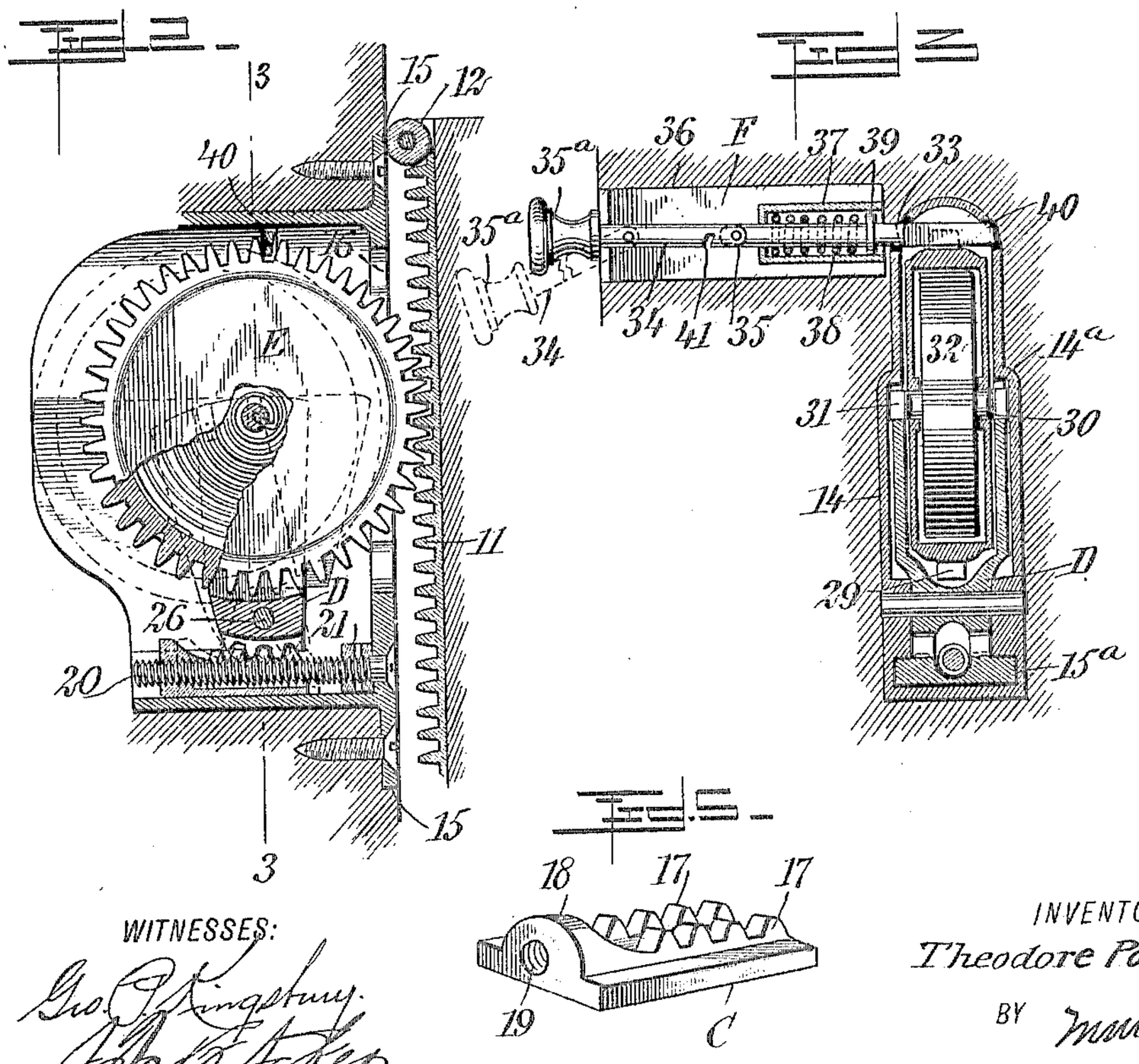

Fig. 5.

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WINDOW-SASH BALANCE AND LOCK.

No. 804,620. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed May 31, 1905. Serial No. 263,068.

To all whom it may concern:

Be it known that I, THEODORE PACHALI, Sr., a citizen of the United States, and a resident of Reading, in the county of Berks and State of Pennsylvania, have invented a new and Improved Window-Sash Balance and Lock, of which the following is a full, clear, and exact description.

The purpose of my invention is to provide a device applicable to window-sashes and window-frames which will dispense with the sash-weights ordinarily used and which will guide the window-sash up and down with the least possible friction, and to provide means for adjusting the device to and from the window-sash, together with means for locking the window-sash closed or in any desired open position.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a portion of a window-frame and an upper and lower sash, the lower sash being shown removed from the frame, and a perspective view of the applied device. Fig. 2 is a vertical section through a portion of a window sash and frame and a vertical longitudinal section through the device, the guide-wheel being shown in side elevation with a portion broken away. Fig. 3 is a vertical transverse section through the device, the section being taken practically on the line 3 3 of Fig. 2. Fig. 4 is an enlarged detail perspective view of the bearing for the guide-wheel, and Fig. 5 is an enlarged detail perspective view of the adjusting-plate for the guide-wheel.

A represents a portion of a window-frame, B a portion of the upper sash, and B′ a portion of the lower sash.

The window-sash is provided at its vertical edge with a groove 10, extending from top to bottom, and in the said groove 10 a track-plate 11 is secured in any suitable or approved manner. A friction-roller 12 is fitted in the said rack-plate at the top portion of the sash, and a second roller is usually provided at the lower portion of the sash, so that the sash will travel in the sash-groove 13 with the least possible amount of friction.

The combined balance and lock for the sash is located in the sash-groove 13, and when employed in connection with the lower sash is so placed as to be opposite the upper portion of the said sash when the sash is closed. A casing 14 is introduced into a suitable opening in the sash-groove 13, and the said casing is preferably narrower at the top than at its central or lower portion, thus providing an interior shoulder 14^a at each side, as is shown in Fig. 3. The said casing is open at the back, but may be closed at option by a suitably-bent strip of metal, and is provided at its front with a face-plate 15, adapted to be countersunk into the sash-groove 13, and said face-plate 15 is provided with a longitudinal opening 16 of desired length.

An adjusting-plate C is held to slide at the bottom of the casing 14 in grooves 15^a, as is best shown in Fig. 3. The said adjusting-plate C is provided with two parallel longitudinal rows of teeth 17, formed upon its upper face, and is further provided at its inner end with an upwardly-extending projection 18, in which a threaded aperture 19 is produced. The plate C is moved to and from the face-plate 15 by means of a screw 20, which is passed through the face-plate, the head of the screw being countersunk in said plate, as shown in Fig. 2, and the said screw is then passed through the recesses between the rows of teeth 17 of the plate and into the threaded aperture 19, as is also shown in Fig. 2. In order that the screw 20 cannot accidentally work out from the face-plate, a collar 21 is attached to the screw 20 within the said casing close to the inner face of the face-plate, as is also shown in Fig. 2.

In connection with the face-plate C a bearing D is employed. (Shown in detail in Fig. 4.) This bearing consists of two upright parallel members 22 and 23 and a base member 24, which connects the upright members, the base member 24 being preferably narrower than the body portion, The base member 24 is more or less segmental at its bottom, and the said bottom surface is provided with two rows of teeth 25, adapted to mesh with the teeth 17 on the adjusting-plate C. The base 24 is also provided with an opening 27, extending through from side to side and in the upper edges of the up-

right members 22 and 23 of the bearing rectangular slots 28 are provided. The bearing is adapted to receive a guide-wheel E, which wheel is hollow and is made in two parts suitably connected, and said wheel is provided with centrally-located peripheral teeth 29. A spindle 30 is passed through a central opening in the wheel and the ends 31 of the said spindle are flattened, so as to fit in the slots 28 of the bearing. Thus the spindle cannot turn, but the wheel is free to turn on the spindle. A spring 32 is located within the wheel, said spring being wound around the said spindle, as is illustrated in Fig. 2, and one end of the spring is secured to the spindle and the other end to the inner peripheral portion of the wheel.

The bearing D is pivotally mounted in the casing 14 by passing a pin 26 through said casing and through the opening 27 in the base of the bearing, as is illustrated in Figs. 2 and 3. The tension of the spring 32 in the wheel is rendered such, after the wheel is in the casing, as to balance the sash in connection with which it is to operate, since the teeth of a guide-wheel E are placed in engagement with the teeth of the rack of said sash and the spring 32 is of sufficient length to permit unwinding and winding as the sash is raised and lowered.

It will be observed from the foregoing construction that the device not only guides the sash in its movement and balances the sash, but it also tends in a measure to assist in lifting the sash.

It will be understood that when the sash is light one device only need be used in connection with said sash; but when the sash is heavy a device will be required for each side of the sash.

In connection with the wheel E a locking device F is employed. (Shown best in Fig. 3.) This locking device consists of a bolt made in two sections 33 and 34, connected by a hinge 35, and the outer section 34 is provided with a knob 35[a], which is outside of one member of a face-plate 36, which face-plate is of angular construction, and when the said bolt is fitted to the device the knob 35[a] appears at the side of the window casing or frame, as is shown in Fig. 3.

A box-casing 37 is formed upon the inwardly-extending member of the plate 36, and the inner member 33 of the bolt passes loosely through the said casing. Within this casing 37 a spring 38 is coiled around the bolt, having bearing against the outer end of the casing and against a collar 39, located on the inner member 33 of the said bolt.

The inner end of the inner member 33 of the bolt is flattened, as is shown in Fig. 2, and has movement in the upper portion of the casing 14 between the teeth of the wheel E, and the outer member 34 of the bolt is provided with a notch 41 in its under face adjacent to the hinge 35. When the bolt is in its normal position, (shown by full lines in Fig. 3,) its inner end 40 is between two of the teeth of the wheel E and the said wheel cannot be turned, so that the sash in connection with which the wheel is used is held stationary at such time in any position in which the sash may have been placed. When the sash is to be raised or lowered, the bolt is drawn outward until the hinge 35 is near the outer end of the plate 36, whereupon the outer member of the bolt is carried downward to the dotted position shown in Fig. 3, and the notch 41 receives the lower edge of the opening in the plate through which the bolt passes, and in this manner the bolt is held out of engagement from the wheel as long as may be required, and the bolt is immediately brought in engagement with the wheel by straightening the outer member of the bolt.

The inner shoulder 14[a] of the casing 14 effectually prevents the spindle 30 moving out of the bearing D when the bearing is in position in the casing 14, as clearly shown in Fig. 3.

By turning the screw 20 the plate C is moved in or out and the bearing D is rocked upon its pivot, enabling the wheel E to be brought into proper engagement with the teeth of the sash.

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

1. In window-sash balances, a casing, a toothed plate mounted to slide in the casing, means for adjusting the plate from the outside of the casing, a bearing pivotally mounted in said casing, having a segmental toothed bottom portion in engagement with the teeth of the said plate, a spring-controlled wheel mounted to turn in the said bearing, a portion of which wheel extends out through an opening in the casing, and a rack adapted for engagement with the exposed portion of the wheel.

2. In window-sash balances, the combination with a casing, a toothed plate having sliding movement in the casing, a screw operated from the outside of the casing, which screw is in operative connection with the said plate, a bearing pivoted in the casing, having a segmental toothed bottom in engagement with the teeth of the said plate, a spindle held fixedly in the said bearing, a hollow-toothed wheel mounted to revolve on the said spindle, a spring coiled around the spindle within the wheel, which spring is attached to the spindle and to the peripheral portion of the wheel, a portion of the wheel extending out through an opening in the casing, and a rack adapted for engagement with the said wheel, of a locking mechanism comprising a guide-plate, a

spring-controlled bolt mounted to slide in the guide-plate, the said bolt being in hinge-connected sections, the inner end of the said bolt having sliding movement in the casing across the peripheral surface of the said wheel, the said inner end of the bolt being adapted to enter spaces between the teeth of the wheel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THEODORE PACHALI, SEN.

Witnesses:

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