

No. 762,692.

PATENTED JUNE 14, 1904.

T. H. & A. DAVIS.
RAILROAD PASSENGER CAR WINDOW.

APPLICATION FILED DEC. 23, 1903.

NO MODEL.

Fig. 1.

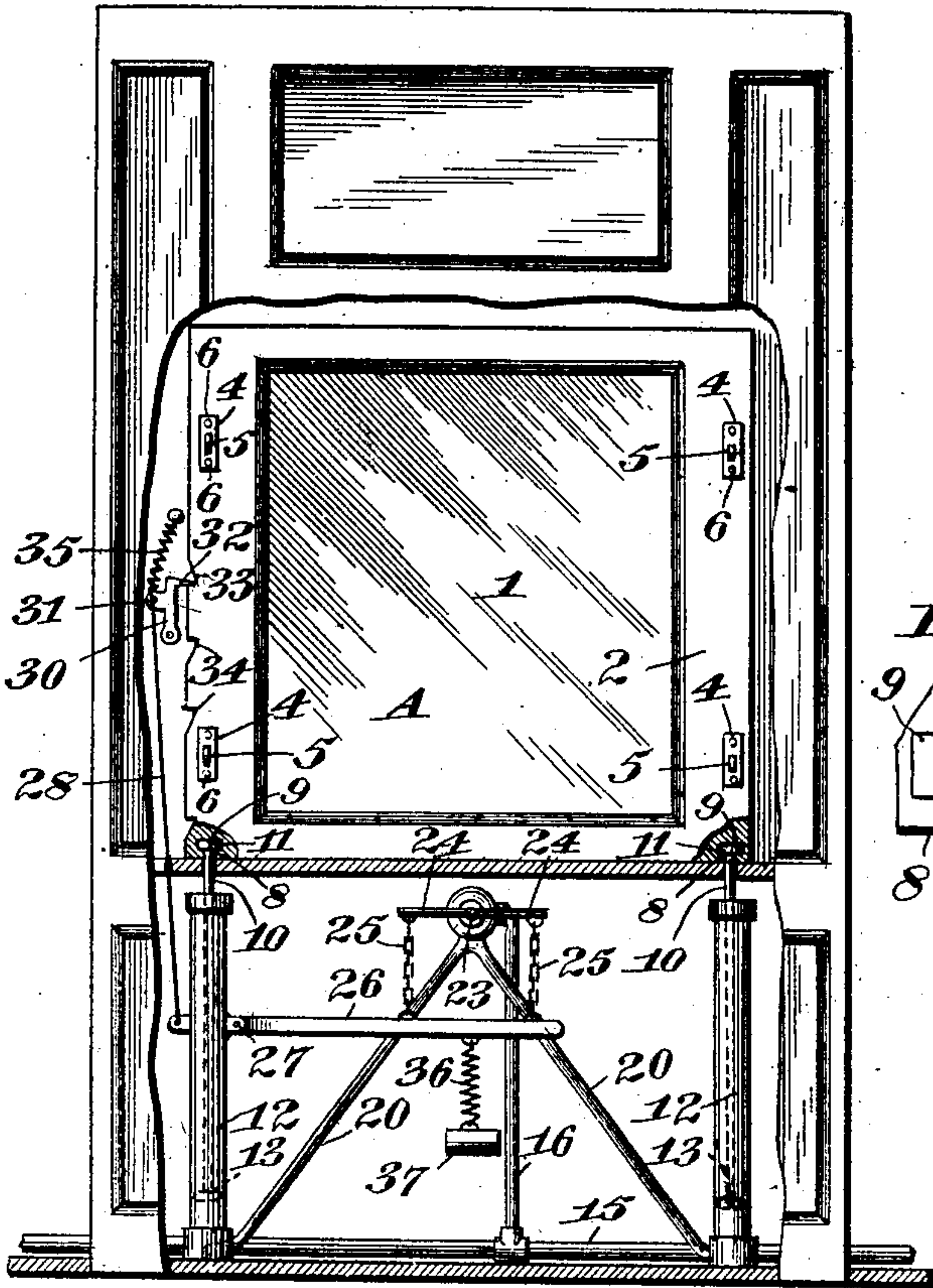


Fig. 2.

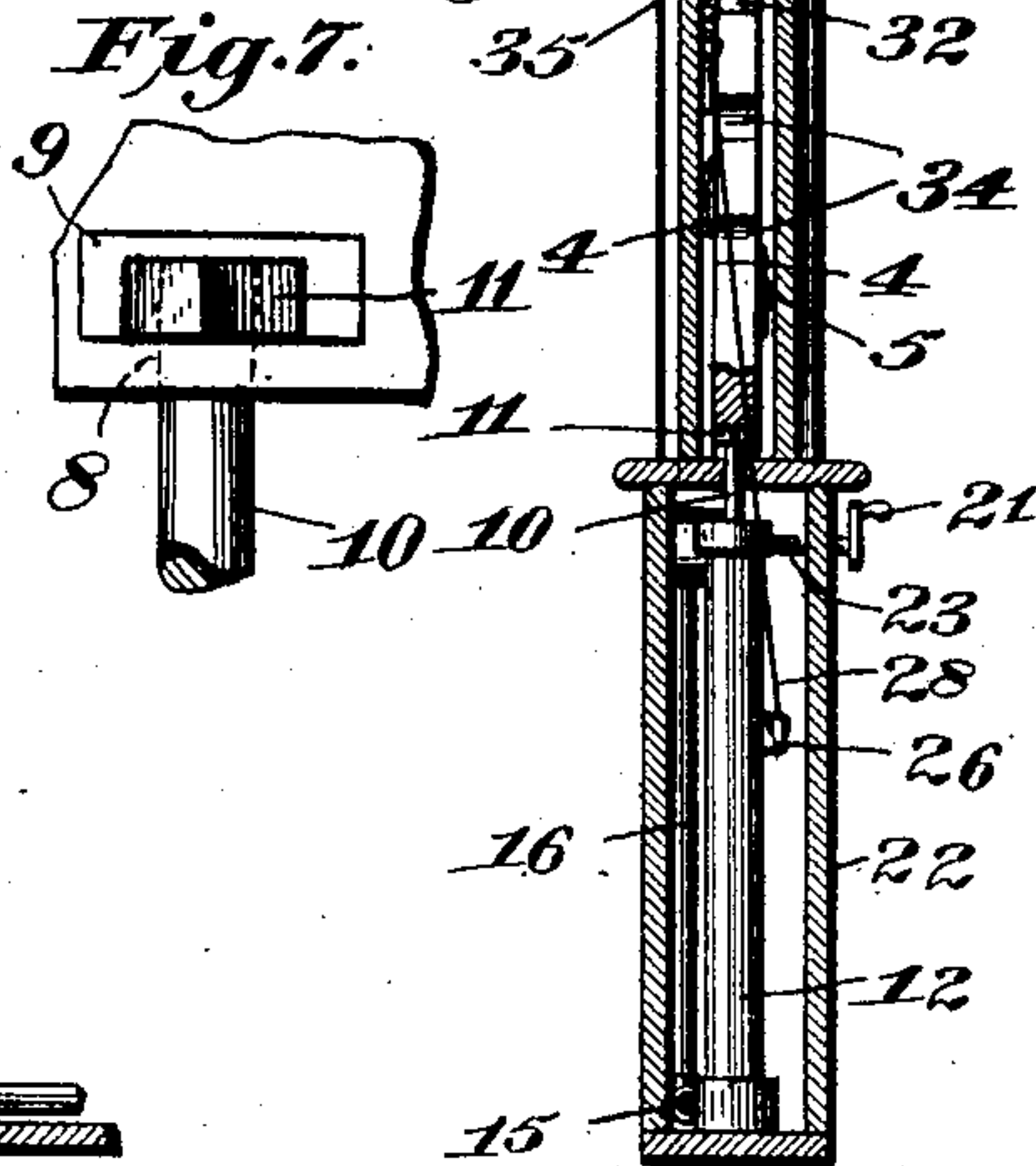


Fig. 3.

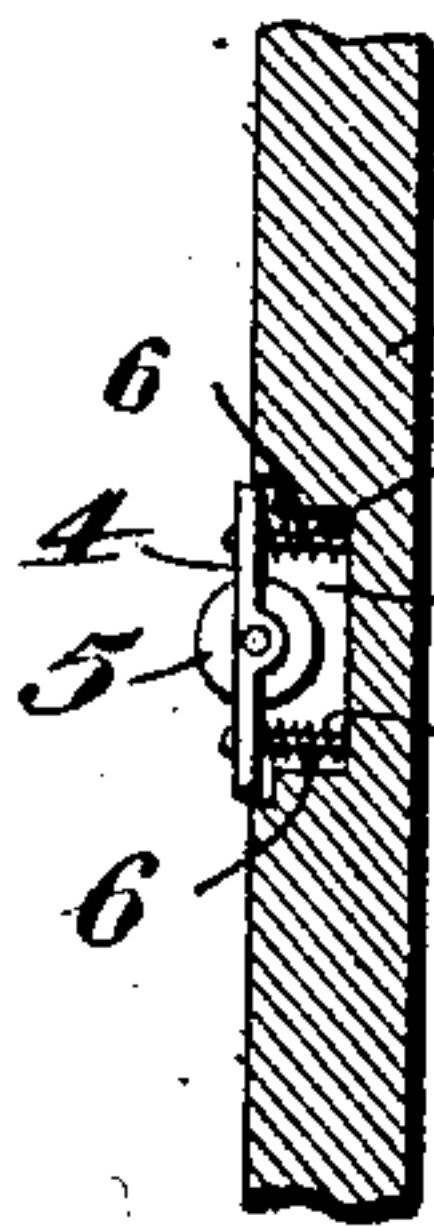


Fig. 4.

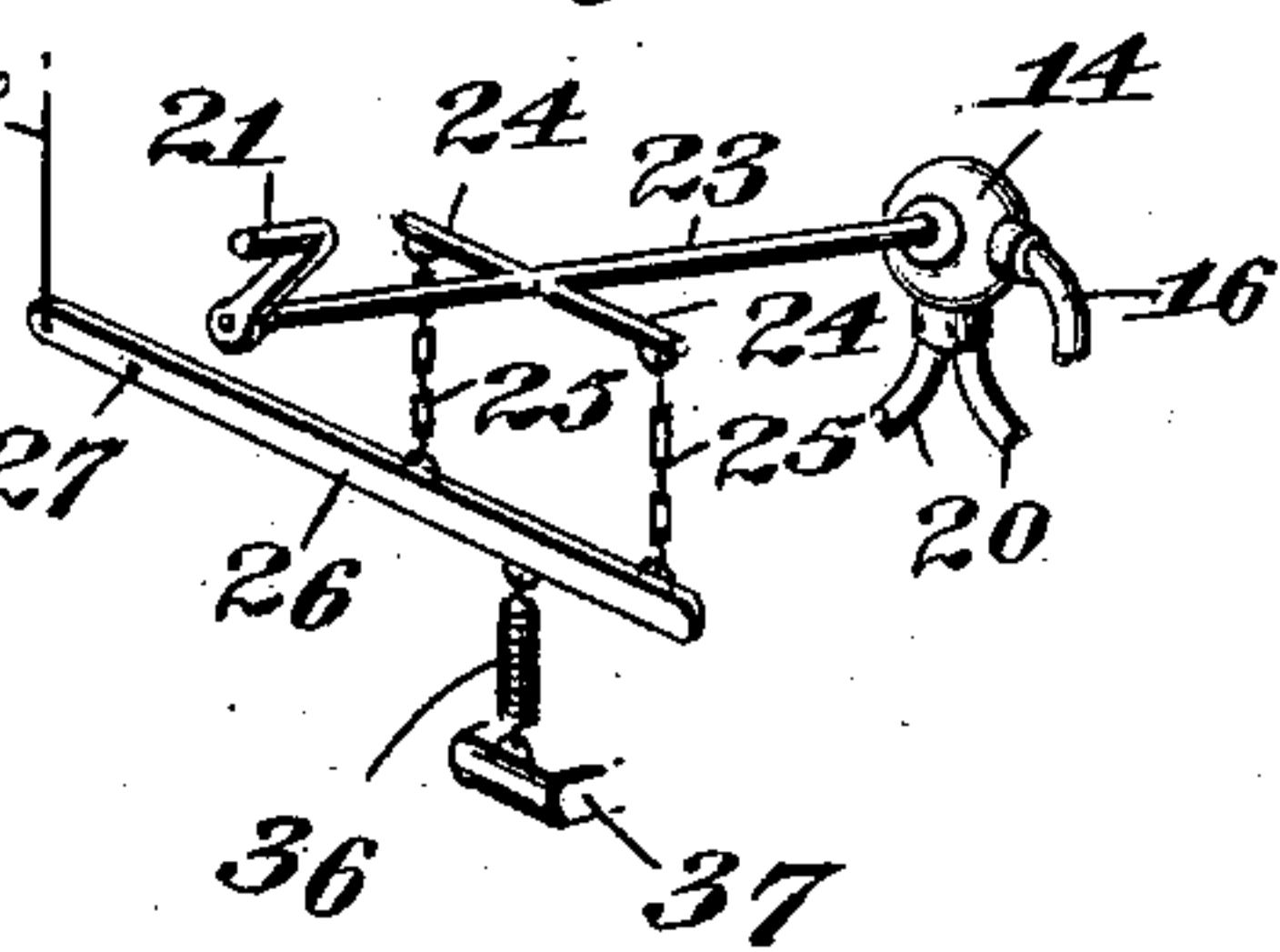


Fig. 5.

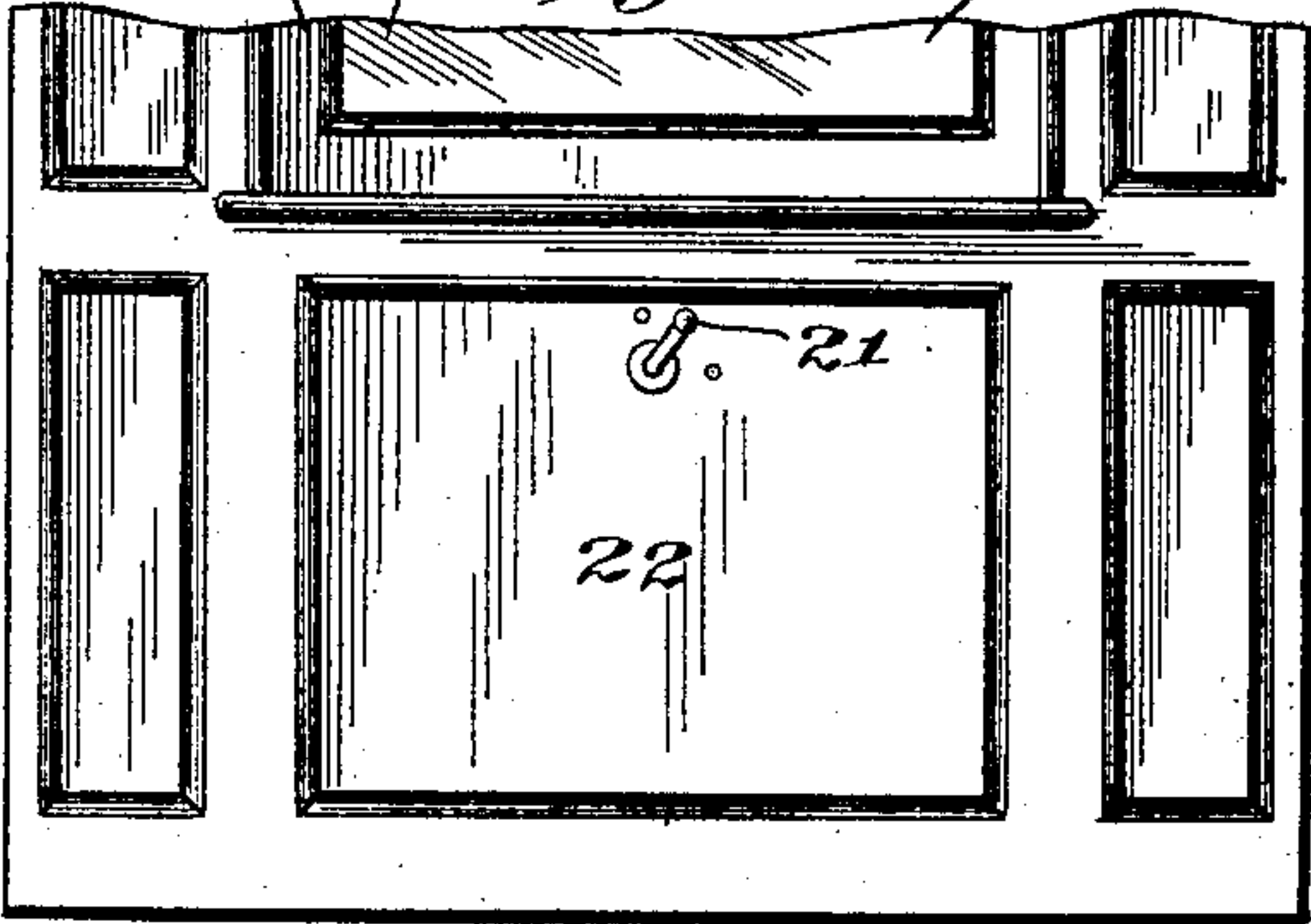
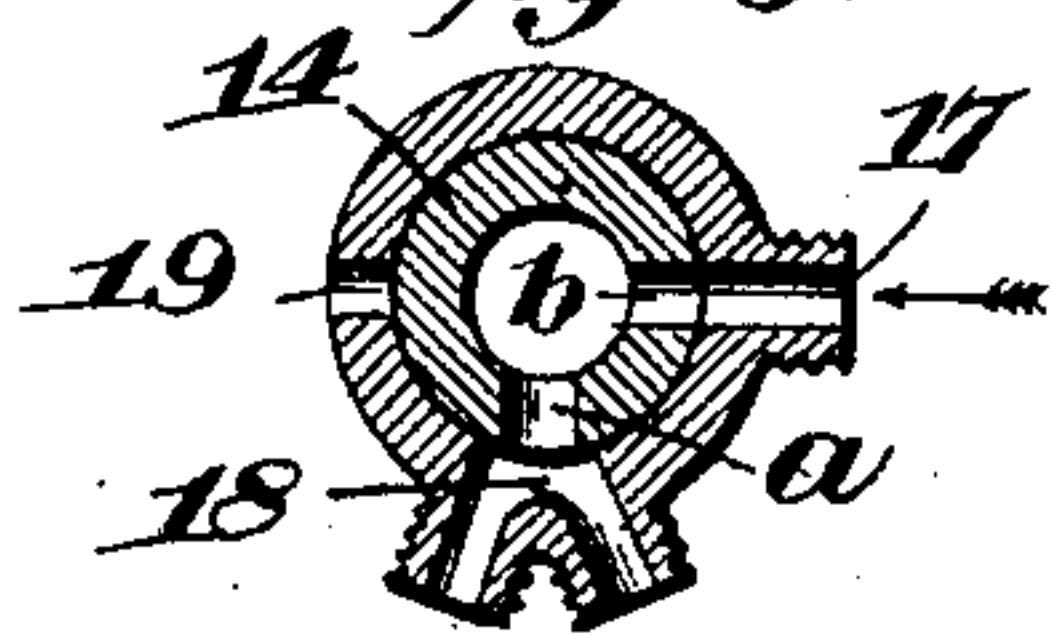


Fig. 6.



Witnesses

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THOMAS HENRY DAVIS AND ARNOLD DAVIS, OF WESTHAVEN,
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RAILROAD-PASSENGER-CAR WINDOW.

SPECIFICATION forming part of Letters Patent No. 762,692, dated June 14, 1904.

Application filed December 23, 1903. Serial No. 186,304. (No model.)

To all whom it may concern:

Be it known that we, THOMAS HENRY DAVIS and ARNOLD DAVIS, citizens of the United States, both residing at Westhaven, in the county of New Haven and State of Connecticut, have invented a new and useful Railroad-Passenger-Car Window, of which the following is a specification.

Our invention relates to an improvement in windows, and more particularly to those devices for opening and closing windows, one object being to automatically effect the movement of the window in either direction by the means hereinafter set forth.

Another object is to provide a device of the above description which may be automatically retained at any point in its adjustment to retain it in open position without danger of its imminent and sudden closing.

A further object is to provide means which automatically engage the window to prevent its being opened when in a closed position or to prevent its being closed from an open position by hand or accidentally, by jarring, &c., such last-named object being supplemental to the object first above set forth.

In attaining these and other advantageous results we employ certain novel features of construction and combinations of parts, which will be more fully described hereinafter and particularly set forth in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of our device, parts being broken away to disclose the structure beneath. Fig. 2 is a view in end or edge elevation, the casing being removed. Fig. 3 is a detail side elevation of an antifriction-roller. Fig. 4 is a detail perspective view of the valve-operating and catch-releasing mechanism. Fig. 5 is a view in side elevation, showing the outer casing or panel and the handle or crank by which the mechanism is operated. Fig. 6 is a transverse cross-section of the valve, and Fig. 7 is a detail view showing the manner of securing the pistons to the window-sash.

A indicates the window, comprising a glass 1 and a sash 2, the latter provided with stepped recesses 3, formed in its vertical stiles for the reception of antifriction-rollers, com-

prising each an apertured plate 4, in which aperture is journaled a roll 5, the plates being loosely secured on pins 6 6, which latter may be surrounded by coil-springs 7 7, engaging the plate to force it against the casing or guides of the sash and permit a smooth and easy movement of the sash in either direction and to prevent a lateral movement of the sash with relation to the casing, thus obviating the usual unpleasant rattling of the sashes, the antifriction-rolls being preferably attached to both sides of the sash. The lower rail of the sash is preferably apertured, as at 8 8, the inner ends of the apertures being intersected by cross-slots 9 9, passing transversely through the rail, the apertures adapted to receive the upper ends of the piston-rods 10 10, which upper ends are securely fastened to the sash by means of nuts 11 11, removably received in the slots 9 9. The opposite ends of the rods 10 10 are received within the cylinders 12 12 and have the pistons 13 13 attached to their inner ends and forming air-tight joints with the bores of the cylinders.

Compressed air or other suitable motive power is conveyed from any suitable source to a valve 14 by means of the pipes 15 16, the pipe 15 extending the length of the car and provided with the branch pipes 16, leading to each valve. This valve is of any suitable three-way construction, the valve-casing being provided with an inlet-port 17, an outlet-port 18, and a vent 19, as shown, the pipe 16 communicating directly with the inlet-port 17. Ducts 20 20, preferably of the inverted-V shape shown, connect at the vertex with the outlet-port 18 and lead each to one of the cylinders 12 12, with which the ducts communicate at a point below the pistons 13 13. The movement of the valve is controlled by means of the handle 21, projecting without the panel 22 of the window-casing, this handle being connected with a valve-stem 23, and to this valve-stem is secured a cross-bar 24, projecting on either side of the stem, the opposite sides of the cross-bar being connected by means of flexible connections 25 25—such as chains, for instance—to the long arm of a lever 26, pivotally supported at 27, the opposite end or short

arm of the lever being connected by means of a fine chain, wire, or other suitable means 28 with a catch. This catch is in the general form of a bell-crank lever pivoted by one arm 5 30 at a point within the window-casing, the outer arm 31 of the catch having secured thereto the connection 28, leading to the lever 26, and this catch is further provided with a laterally-projecting pawl or tooth 32, adapted 10 to take into any one of a series of notches 33 34, formed in the outer edge of the stile of the window. In this construction it will be observed that the notch 33 is so arranged that when the tooth is therein received the window 15 cannot be opened until the lever 26 is operated, and, further, when the tooth or pawl is in any one of the notches 34 34 the window cannot be lowered until the lever is operated, thus preventing the window from closing acci- 20 dentally. Any desirable number of notches 34 34 may be provided to afford a number of intermediate adjustments between its open and closed positions, and the latch or catch retains the window positively in either of its closed 25 or opened positions. The latch is automatically actuated by means of a spring 35, the tendency of which is to force the catch into engagement with the notches in the stile and against the tension of which spring the latch 30 is moved when the lever 26 is operated. The lever is, however, normally held at one limit of its movement by means of the spring 36, connected thereto and to any suitable abutment 37, as shown.

35 Having thus described our invention, we will now set forth its operation. It will be understood that our device is applicable not only to car-windows, the difficulty of whose 40 operation has long been a recognized evil, but it may also be applied to windows of houses or other buildings, vertically-sliding doors, or, in fact, to any similar structure which is raised and lowered. The spring 36 not only retains the lever 26 at one limit of 45 its movement, but also retains the handle 21, which has three positions, in its intermediate position. (Shown in Fig. 5.) With the handle at this position the catch is in engagement with one of the notches 33 34 and the valve 50 14 is in closed position, whereby the openings *a b* thereof are out of register with either of the ports 17 and 18 or vent 19, and, further, it may be stated at this time that the tendency of the spring 36 is such that if the 55 handle is released when it is in its vertical position or in its horizontal position the handle and valve automatically return to their intermediate positions, the handle when in its vertical position having rotated the valve 14, so that its openings *a b* register with inlet and 60 outlet ports 17 and 18, and when the handle is in its horizontal position the valve-openings *a b* are in communication with the outlet-port 18 and the vent 19 of the casing.

65 Supposing therefore that the window is in

closed position (shown in Fig. 1) and it is desired to open it, the handle 21, which is located just below the window-sill, is turned to vertical position and by means of the stem 23 moves the valve 14 to the position shown 70 in Fig. 6, whereupon the motive power is admitted through pipe 15, branch pipe 16, and valve 14 to the ducts 20 20, which convey the power to the cylinders 12 12, where it is applied to the pistons 13 and their rods 10, and 75 thus transmitted to the window. It will be observed that the rods bear against the windows at points equidistant from the vertical edges and from the vertical center thereof, whereby an even pressure is brought to bear 80 on the window and it is steadily raised. When a single piston only is employed, there is danger of its exerting an unequal pressure on one side or the other of the center of the window, resulting in twisting the window in 85 its casing and preventing or at least requiring a vast amount of power to raise the window. We avoid this danger by the use of two pistons spaced equally apart from the center and from the edges—that is to say, 90 there is the same distance between each piston and its adjacent vertical edges and also the same distance between each piston and the vertical center of the sash. At the same time and with the same movement of the han- 95 dle 21, which permits the entrance of power to the cylinders, the cross-bar 24 has been rocked to exert a pull on one of the connections 25 between itself and the lever 26, which is thereby rocked against the tension of 100 spring 26, its short arm, to which the connection 28 is secured, being thereby depressed to rock the bell-crank against the tension of its spring 35 and cause the release of 105 the pawl from notch 33, this release being effected immediately previous to the establishment of communication between the openings *a b* and ports 17 18. In the event that the window is only to be raised part way the 110 handle is released when the window has attained the desired elevation, whereupon both handle and valve are automatically returned to the intermediate position heretofore set forth, thereby immediately cutting off the 115 supply of motive power to the cylinders and also permitting the lever 26 and bell-crank to return to their normal positions, the tooth 32 engaging the slot opposite thereto. Not only this, but the rotation of the valve to its intermediate position prevents the entrance of 120 power to the cylinders and likewise the emission of the fluid already therein, so that the fluid, which is usually compressed air, is locked in the cylinders and prevents the descent of the pistons, affording additional means for re- 125 taining the window in raised position. When the window is to be lowered, the handle 21 is rotated to its horizontal position to connect the port 18 with the vent 19, thereby permit- 130 ting the motive power in the cylinders to es-

cape and allow the window to descend by its own weight. Of course when the handle is so rotated the cross-bar 24 has been rocked in the opposite direction from that in which it was rocked when the window was to be raised to release the catch; but owing to the fact that each end of the cross-bar is connected to the long arm of the lever the operation thereof is the same. The vent being smaller than the port 18 permits the slow escape of the contained air to prevent the sudden descent of the window, the weight of the window bearing on the pistons operating to force the air out of the cylinders.

We are aware that previous to our invention means have been devised to effect the automatic opening of windows and that pawls or teeth have been employed for retaining the windows in open position, and we therefore do not claim such broadly.

It is evident that many changes might be made in the form and arrangements of the several parts described without departing from the spirit and scope of our invention, and hence we do not wish to limit ourselves to the exact construction herein set forth; but

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

1. The combination with a sliding member provided with antifriction means, of means for actuating the sliding member, a valve controlling the actuating means, a stem on the valve, a locking member engaging the sliding member, a lever to one end of which the locking member is connected and means connecting the opposite end of the lever with the valve-stem for operating the locking member and valve in sequence.

2. The combination with a sliding member having apertures formed therein and intersected by slots, of piston-rods received in the apertures, fastening means located in the slots and engaging the piston-rods, means for actuating the piston-rods, means for causing the operation of the actuating means, a locking member normally engaging the sliding member, and means connecting the locking member with the operating means and actuated thereby previous to the actuation of the rods.

3. The combination with a sliding member, piston-rods connected therewith, cylinders in which the pistons are received, pistons on the rods and within the cylinders, a valve-casing provided with inlet, outlet and exhaust ports, means connecting the inlet-port with a suitable source of supply, means connecting the outlet-port with the cylinders, and a valve in the casing provided with a plurality of openings adapted to register with the ports, of a valve-stem secured to the valve, a cross-bar secured to the valve-stem, and projecting on each side thereof, a lever connected to the

cross-rod, a locking member connected with the lever, and means for operating the lever and valve in sequence.

4. The combination with a sliding member provided with actuating means, of a valve controlling the actuating means, a locking member engaging the sliding member, a lever, means connecting the locking means and one end of the lever, a manually-operated stem for operating the valve and flexible means connecting the stem and the opposite end of the lever to cause the operation of the locking member and valve in sequence.

5. The combination with a sliding member provided with actuating means, of a valve for controlling the actuating means, a valve-operating means, a locking member for engaging the sliding member, means for causing the normal engagement of the locking and sliding members to positively retain the sliding member in position, a lever, means connecting the lever and locking member and means connecting the lever and valve-operating means, to cause the actuation of the locking and sliding members in sequence.

6. The combination with a sliding member having an actuating means, of a valve for controlling the actuating means, means for operating the valve, a cross-bar on said valve-operating means, a pivoted lever, a pivoted catch adapted to engage and lock the sliding member, means connecting the catch to one end of the lever, and flexible means connecting the cross-bar to the opposite end of the lever to effect the operation of the catch and valve in sequence.

7. A sliding member provided with actuating means, a valve controlling the actuating means, a valve-stem secured to the valve, a locking member for engagement with the sliding member, a lever with one end of which the locking member is connected, and means connecting the opposite end of the lever and the valve-stem to cause the operation of the locking means in either direction of rotation of the stem.

8. A sliding member comprising an actuating means, a valve controlling the actuating means, a valve-operating means, a locking means engaging the sliding member, a lever with which the locking means is connected, means connecting the lever and valve-operating means, and means engaging the lever for automatically retaining the valve and locking means in predetermined positions.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS HENRY DAVIS.
ARNOLD DAVIS.

Witnesses:

H. W. BEECHER,
SAMUEL E. CAMPBELL.