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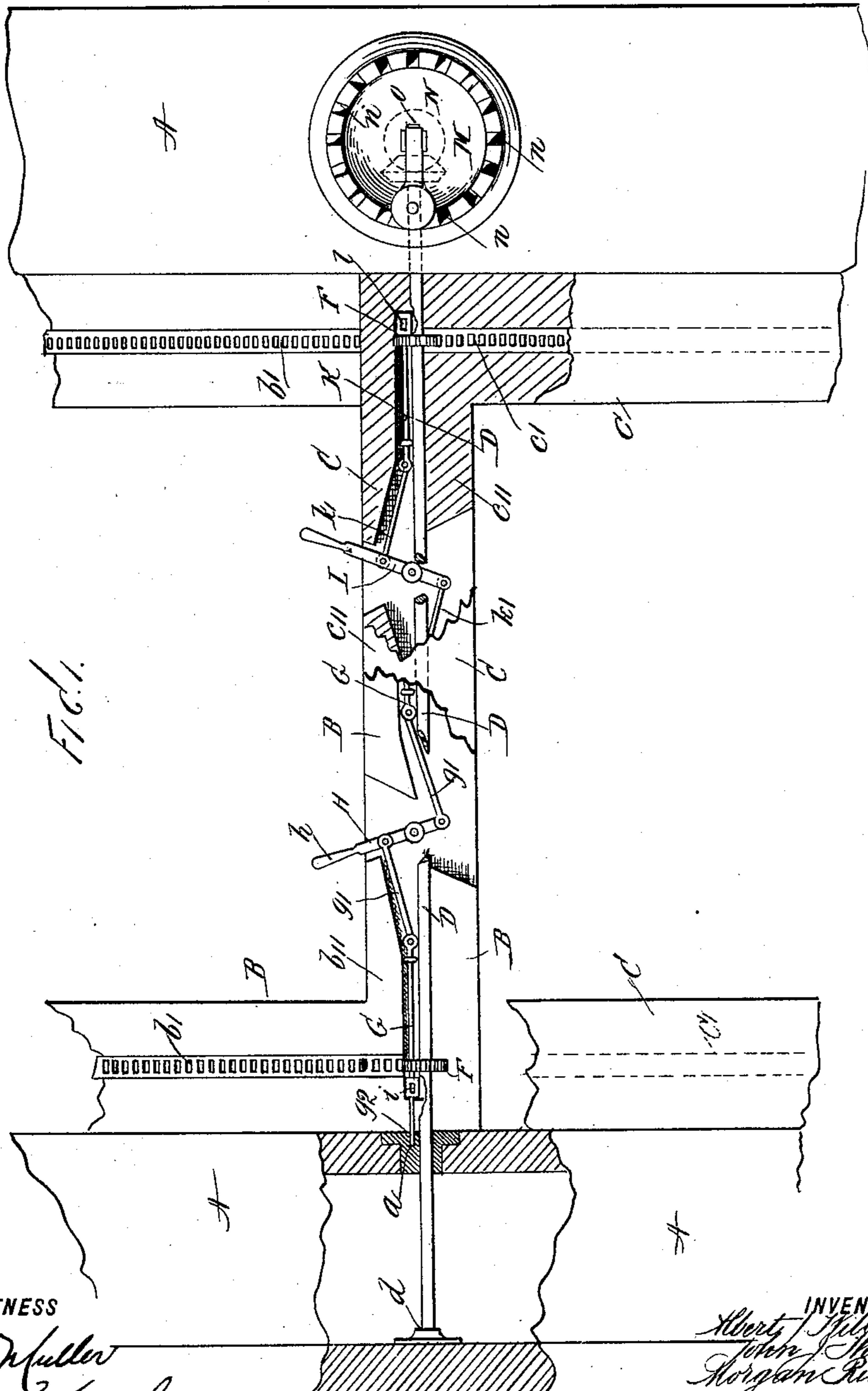
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A. J. WILLIAMS, J. J. THOMAS & M. RICHARDS.

WINDOW LOCK AND OPERATOR.

No. 605,569.

Patented June 14, 1898.



WITNESS

*L. M. Fuller*  
*M. A. Knowles*

INVENTORS

*Albert Williams*  
*J. J. Thomas*  
*Morgan Richards*

BY

*Edgar Tate & Co.*  
ATTORNEYS

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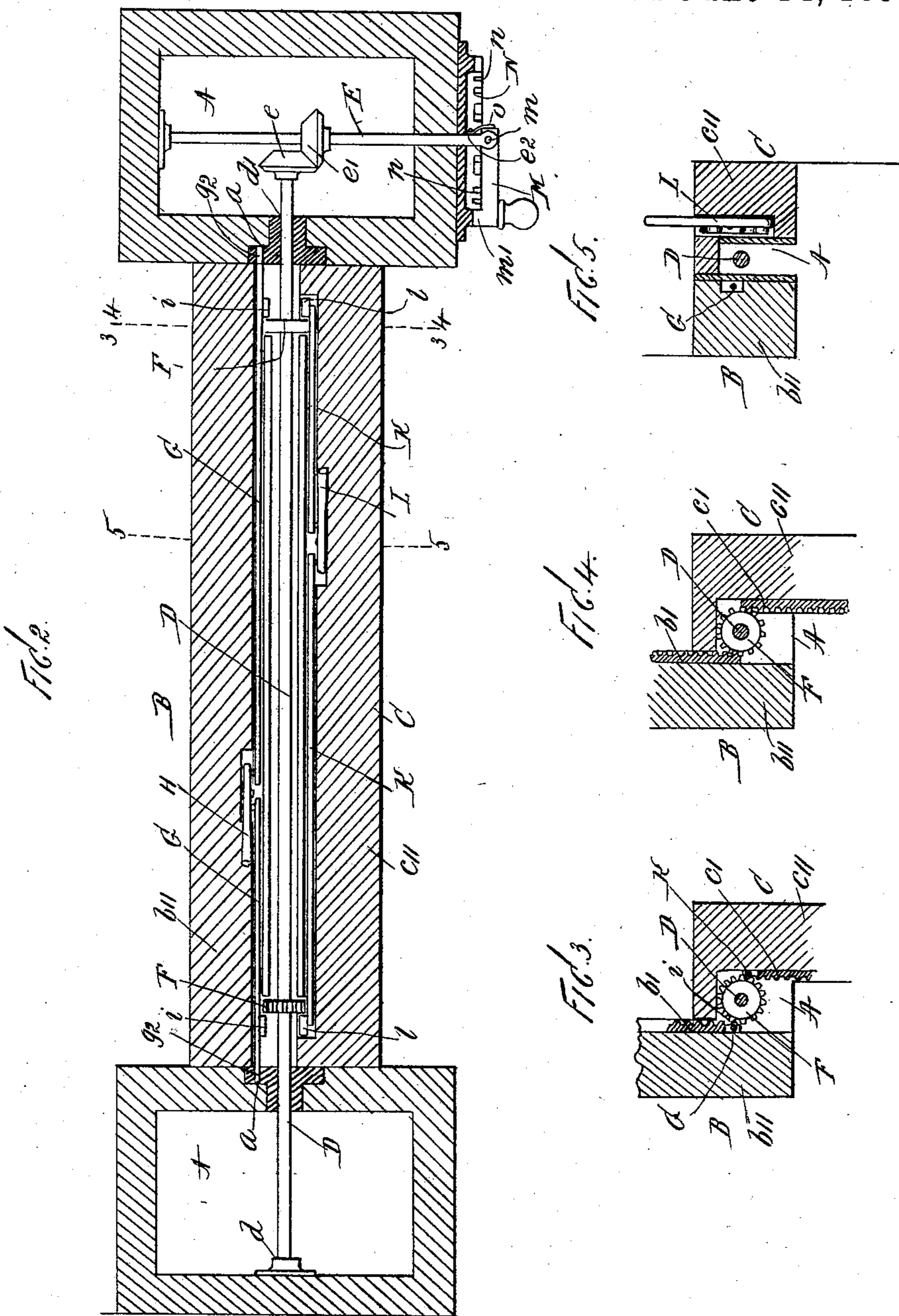
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*Morgan Richards*  
BY  
*Edgar Tate & Co.*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

ALBERT JAMES WILLIAMS, JOHN J. THOMAS, AND MORGAN RICHARDS, OF  
UNIONTOWN, PENNSYLVANIA.

## WINDOW LOCK AND OPERATOR.

SPECIFICATION forming part of Letters Patent No. 605,569, dated June 14, 1898.

Application filed December 16, 1897. Serial No. 662,112. (No model.)

*To all whom it may concern:*

Be it known that we, ALBERT JAMES WILLIAMS, JOHN J. THOMAS, and MORGAN RICHARDS, citizens of the United States, residing at Uniontown, in the county of Fayette and State of Pennsylvania, have invented certain new and useful Improvements in a Combined Window-Sash Hoisting and Locking Mechanism, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to a combined window-sash hoisting and locking mechanism; and it has for its object to provide a simple and improved mechanism of this character which will be inexpensive in construction, effective in operation, and which will obviate the use of cords or weights.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of our improvement are designated by the same letters of reference in each of the views, and in which—

Figure 1 is a front elevation of a portion of a window provided with our invention, the view being taken on the inside and parts being broken away to show the interior construction. Fig. 2 is a transverse horizontal sectional view taken on the plane of the operating mechanism of the sashes; and Figs. 3, 4, and 5 are vertical transverse sectional views.

In the drawings forming part of this specification, A designates the window-frame, B the upper sash, and C the lower sash. The sidestile or frame-bars of the respective sashes are provided at their inner opposite faces with vertical longitudinal rack-bars  $b'$  and  $c'$ , respectively.

Intermediately between the bottom stile or frame-bar  $b''$  of the upper sash and the top stile or frame-bar  $c''$  of the lower sash is mounted a transverse rotary shaft D, having a bearing, as at  $d$ , at one end in the window-frame A, and having its opposite end bearing, as at  $d'$ , in the opposite side of the window-frame, this latter end being extended within the frame and provided with a bevel-pinion  $e$ , meshing with a corresponding gear  $e'$  upon

a shaft E, bearing within the window-frame and transversely mounted with relation to the shaft D, the front end of said shaft E being arranged to project from the casing A at the front or inside face of the latter, as shown at  $e^2$ .

The shaft D carries two gears F F, adapted to respectively mesh with the rack-bars  $b'$  and  $c'$  upon the upper and lower sashes. The lower ends of the rack-bars  $b'$  of the upper sash and the upper ends of the rack-bars  $c'$  of the lower sash terminate, respectively, at a sufficient point above and below the gears F to provide a relative construction and arrangement in which the rack-bars will be out of engagement with said gears and when the window-sashes are in normal closed position. Therefore when the sashes are in normal closed position the shaft D and its gears will rotate without engagement with or action upon either sash.

To provide for sustaining and locking the upper sash in closed position, two oppositely-projecting bars G G are slidably mounted within the lower stile or frame-bar  $b''$  of the sash and in longitudinal position with relation to the latter, the inner ends of these bars being pivotally connected by means of connecting-rods  $g' g'$  with an operating-lever H, fulcrumed in the stile  $b''$  and having an operating-handle  $h$ , projecting therefrom at the top. The pivoted rods  $g' g'$  connect with the lever H at different sides of the fulcrum of the latter, so that when the lever is turned upon its fulcrum the oppositely-projecting bars G G will be simultaneously drawn inwardly or simultaneously projected outwardly, their respective ends  $g^2$  being adapted to engage suitable receiving recesses or holes  $a$  in the respective sides of the window-frame. This bar and lever mechanism thus serves to lock the upper sash and sustain the same in closed position.

The bars G carry a section of a rack, as at  $i$ , corresponding to and adapted to register with the lower ends of the rack-bars  $b'$  and adapted to pass into and out of engagement with the gears F. The relative construction and arrangement are such that when the bars G are in locked position the sections of racks  $i$  will be out of engagement with the gears F

and out of alinement with the rack-bars  $b'$ , so that any rotation of the shaft D and its gears will effect no operation of the upper sash; but when the bars G are moved into unlocking position and from engagement with the recesses  $a$  by operation of the lever H the rack-sections  $i$  will be brought into registering position with the rack-bars  $b'$  and into engagement with the gears F, so that rotation of the shaft D will then operate the upper sash.

We provide in the top stile or frame-bar  $c''$  of the lower sash a corresponding arrangement of slidable bars K K with their pivotal connecting-rods  $k' k'$ , connecting with an operating-lever L. These bars K K may be arranged to slide into locking engagement with holes or recesses in the window-casing in the same manner as the bars G G of the upper sash; but inasmuch as it is not necessary to sustain or support the lower sash in closed position said locking connection may be dispensed with, the bars K K being under these circumstances simply designed to carry rack-sections  $l$  into and out of engagement with the gears F and into and out of alined position with the rack-bars  $c'$  of the lower sash. By means of its slidable bars carrying the rack-sections and connected with the operating-lever mechanism the lower sash may be locked into engagement with the rotary shaft D and its gears or disconnected therefrom, so that said shaft will revolve without operating the lower sash.

From the foregoing description, taken in connection with the drawings, it will be understood that the upper sash can be locked and sustained in position independently of the rotary shaft D, or it can be unlocked from sustained position and brought into engagement with said shaft, while the lower sash can be engaged or disengaged from the rotary shaft D, the independent and respective operation of the upper and lower sashes being thus permitted.

The upper and lower sashes are raised or lowered simultaneously or independently by means of the rotary shaft D and its gears, the relative operations being governed by the connection or disconnection of the sashes with the gears of the shaft by means of their sliding-bar mechanism.

To operate the shaft E, which communicates motion to the shaft D, we provide a crank handle or lever M at its projecting front end  $e^2$ , said crank-arm being preferably pivotally connected to the end of the shaft, as at  $m$ , so that a catch  $m'$  at the inner side of its outer end can be engaged with or disconnected from a concentric series of notches  $n$ , arranged in a face-plate N, provided upon the window-casing, this pivotal movement of the crank arm or handle M being governed by a spring  $o$ , projecting from the shaft E and bearing upon the pivotal connection  $m$ .

It will be understood that the crank M may be operated from and to the notched face-plate to engage with or detach from the locking-

notches therein and may be rotated in either direction to raise or lower the sashes either in a simultaneous or independent movement.

By reason of the locking connection between the plate N and the operating-handle M the sashes will be locked in any position to which they may have been adjusted whenever said sashes are in connection with the gears on the rotary shaft D, and the said mechanism will also serve to lock either or both sashes when they are in normal closed position whenever the rack-sections  $i$  or  $l$  are brought into contact with the gears F. The locking operation of the handle M is virtually automatic by reason of its spring-controlled pivotal connection with the shaft E. It will furthermore be noted that the arrangement of the mechanism is such that the sashes can only be operated from the inside of the window, no operation of the mechanism from the outside being possible.

Our improvements are especially adapted for application to single window-sashes—such as are used in street and railroad cars, boats, &c.—and in connection with such single sashes the locking-bars, with their operating-levers and rack-sections, such as are used in a window embodying an upper and lower sash, may be dispensed with, it being only necessary to have the gears F upon the shaft D normally engaged with the vertical rack-bars, so that the sash can be raised or lowered by movement of the handle M and locked in any position to which it may be adjusted.

Having fully described our invention, we claim as new and desire to secure by Letters Patent—

1. An improved window-sash mechanism, comprising a rotary shaft arranged with respect to the sash and carrying gears, vertical rack-bars carried by the sash, and adapted to be engaged by said gears, the relative arrangement being such that said rack-bars terminate at a point beyond connection with the gears when the sash is in normal position, in combination with a slidable bar carried by the sash and provided with a rack-section adapted to be brought into connection with the gears upon the rotary shaft and into alinement with the vertical rack-bar upon the sash, and means for operating said bars carrying the rack-bar section, substantially as and for the purpose set forth.

2. An improved window-sash mechanism, comprising a rotary shaft arranged with respect to the sash and provided with gears, vertical rack-bars carried by the sash and adapted to be engaged by said gears, the relative arrangement being such that said rack-bars terminate at a point beyond engagement with the gears upon the rotary shaft when the sash is in normal position, bars slidably mounted in the end cross-bar of the sash frame and carrying rack-sections adapted to be brought into connection with the gears upon the rotary shaft and into alinement with the vertical rack-bars upon the sash, and an

operating-lever fulcrumed upon the sash and connected by pivotal connecting-bars with said slidable bars, substantially as and for the purpose set forth.

5 3. An improved window-sash hoist and lock mechanism, comprising a rotary shaft carrying gears, vertical rack-bars carried by the sash and adapted to be engaged by said gears, the relative arrangement being such that the  
10 vertical rack-bars terminate at a point beyond engagement with the gear upon the rotary shaft when the sash is in normal position, bars slidably mounted upon the sash and carrying rack-sections adapted to be brought into con-  
15 nection with the gear upon the rotary shaft and into alinement with the vertical rack-bars upon the sash, and means for operating said slidable bars, in combination with the win-  
20 dow-frame having recesses or holes, said slidable bars being extended so that they will engage said recesses or holes when their rack-sections are out of connection with the gear upon the rotary shaft, substantially as and for the purpose set forth.

25 4. An improved window-sash mechanism, comprising a rotary shaft arranged with respect to the sash and provided with gears, ver-

tical rack-bars carried by the sash and adapted to be engaged by said gears, the relative arrangement being such that said rack-bars  
30 terminate at a point beyond the gear upon the rotary shaft when the sash is in normal position, bars slidable upon the sash and carrying rack-sections adapted to be brought into  
35 engagement with the gear upon the rotary shaft and into alinement with the vertical rack-bars upon the sash, means for operating said slidable bars, an operating-shaft transversely arranged with relation to the rotary  
40 shaft and connected therewith, an actuating handle or device carried by said operating-shaft, and means for locking said operating-shaft in adjusted position, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as  
45 our invention we have signed our names, in presence of the subscribing witnesses, this 9th day of December, 1897.

ALBERT JAMES WILLIAMS.

JOHN J. THOMAS.

MORGAN RICHARDS.

Witnesses:

GOMER LEWIS,

D. B. DAVIS.