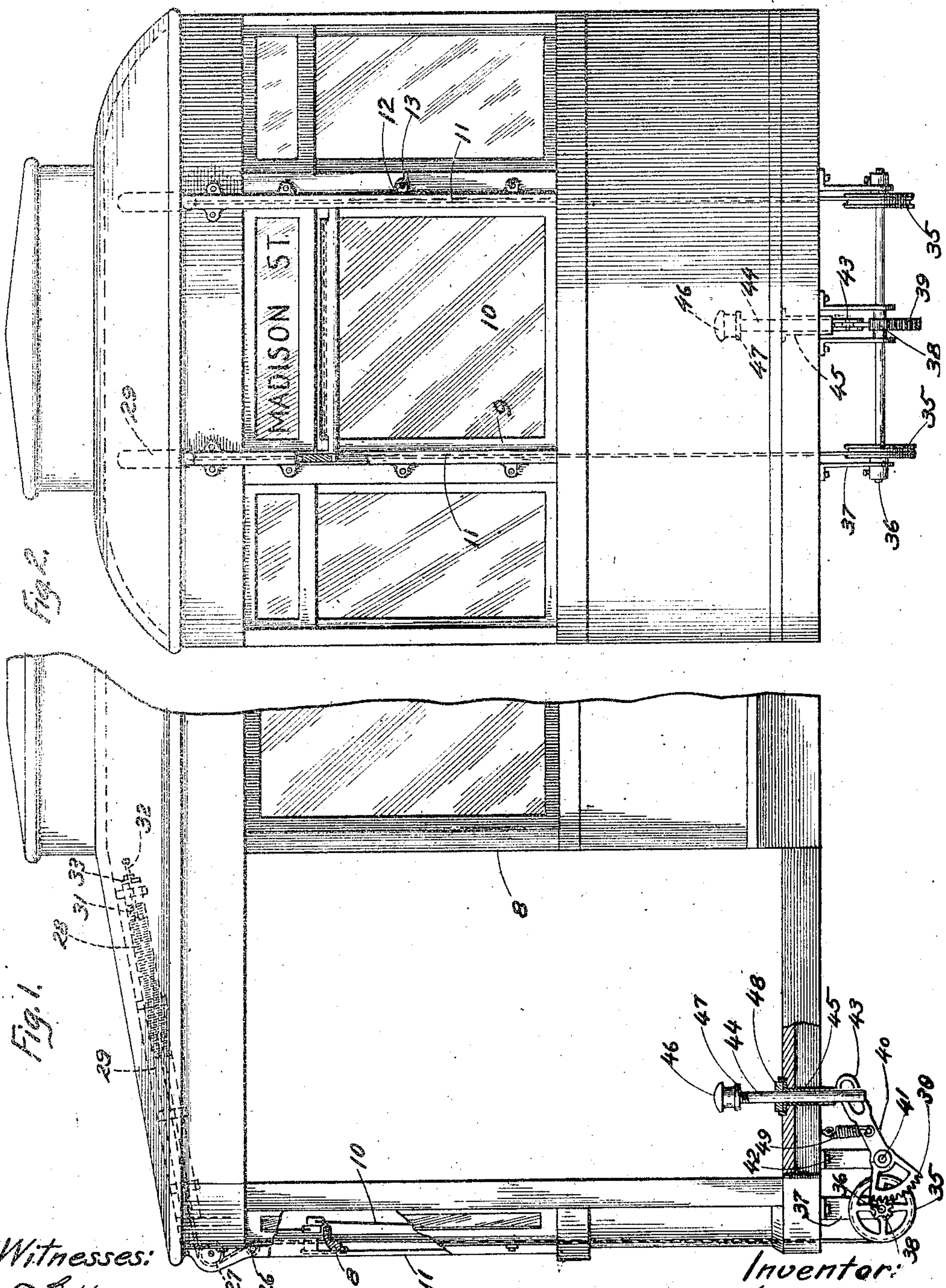


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WINDOW CLEANING APPARATUS.  
APPLICATION FILED SEPT. 23, 1909.

966,660.

Patented Aug. 9, 1910.

3 SHEETS—SHEET 1.



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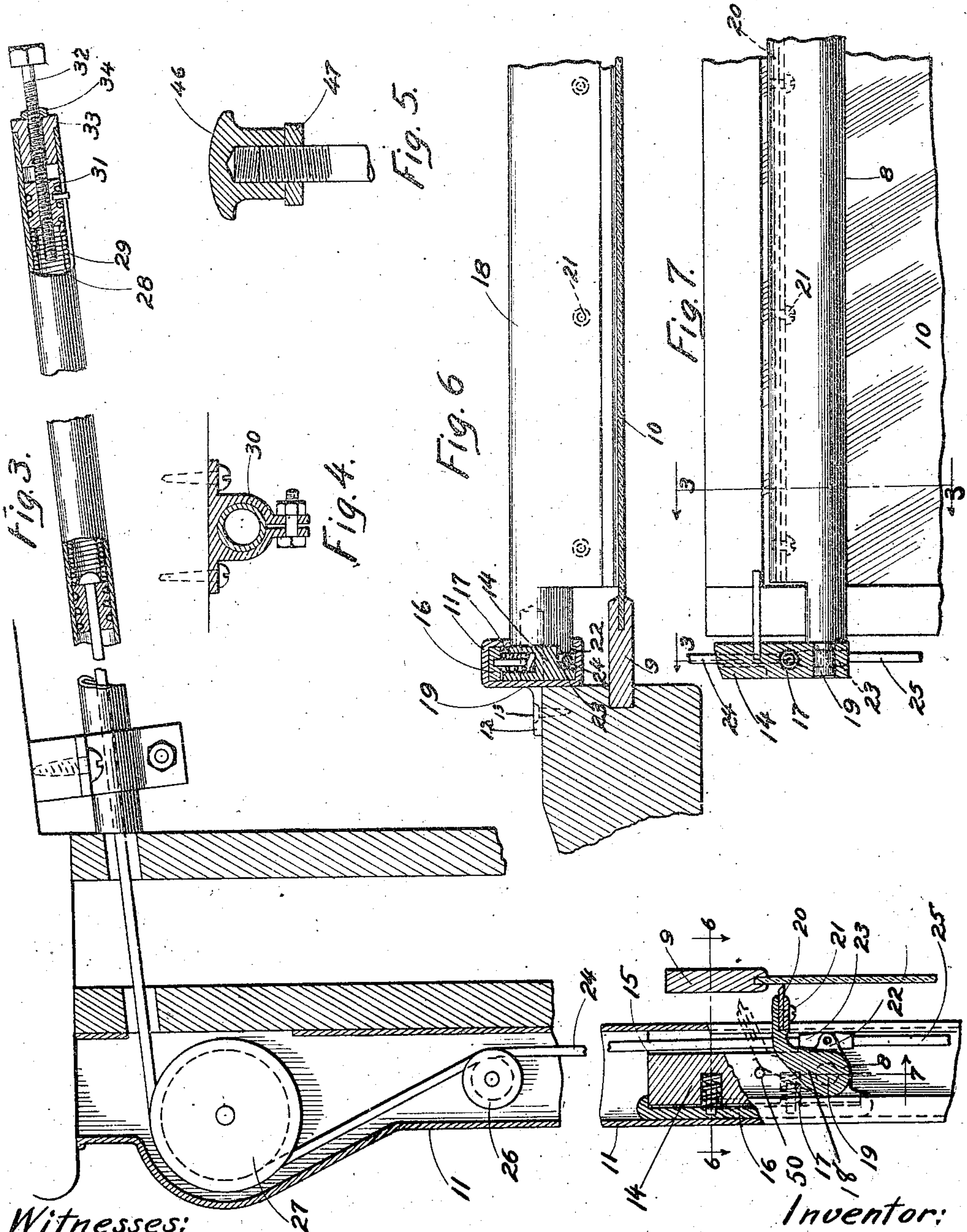


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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

PETER F. DALY, OF CHICAGO, ILLINOIS.

WINDOW-CLEANING APPARATUS.

966,660.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed September 23, 1909. Serial No. 519,274.

*To all whom it may concern:*

Be it known that I, PETER F. DALY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Window-Cleaning Apparatus, of which the following is a specification.

This invention relates to devices or apparatus adapted for cleaning windows and particularly applicable for use on the front windows of street cars, railway cars, and motor vehicles or other conveyances. Its objects are to provide a simple and efficient means for removing the rain, vapor or moisture from the outer side of the window, together with suitable operative mechanism whereby the cleaning device may be operated by the driver or motorman without leaving his position in the car or other vehicle.

A preferred form of my invention, showing the mechanism for accomplishing these objects, is shown in the accompanying drawings, in which—

Figure 1 is a side view of one end of a street car equipped with my window cleaning device, parts being broken away to show the interior construction; Fig. 2 is a front view of the car shown in Fig. 1; Fig. 3 is an enlarged sectional detail showing the window cleaner and return mechanism; Fig. 4 is a detail of one of the clips for holding the return-spring tube; Fig. 5 is a detail showing the adjustable cap for the foot plunger; Fig. 6 is a sectional plan view taken on line 6—6 of Fig. 3; and Fig. 7 is a front view of the parts shown in Fig. 6.

As indicated in these drawings, 8 represents a street car of any ordinary construction, although it will be understood that my improved window cleaner may also be applied to windows of other vehicles, or in fact to windows of any kind where it may be adapted to be used. The sash of the front window of the car, to which my device is applied, is indicated at 9, and the pane thereof, at 10. Along the posts or frame forming the front of the car, I provide guides 11—11, preferably of rectangular cross-section and open at one side, as shown most plainly in Fig. 6. These guides are provided with lugs 12, having screws 13 which engage with posts or other suitable part of the car frame. Slides or carriages 14 engage with the guides 11 and support

or carry the wiper, squilgee or other device for cleaning the windows. These carriages or slides consist of the main blocks or members 15 with friction shoes 16, these shoes being held against the inner sides of the guides 11 by means of springs 17, as shown in Figs. 3 and 6.

The squilgee or cleaning device proper 18 comprises a long bar of angular cross-section, as indicated in Fig. 3, the main portion of which is provided with trunnions or gudgeons 19 which engage with the blocks 15 of the slides or carriages 14, while the inwardly extending portion is provided with a wiper 20 of rubber or other suitable material adapted for cleaning a window, this wiper being held in position in any suitable manner, as by means of the screws 21 which clamp it within the groove in the edge of the bar. Lugs or projections 22 extend inwardly from this bar, adjacent to the trunnions 19 and engage with clamps or clips 23 which are secured to the operating ropes 24 and 25. One set of these ropes or cords is for drawing the device down, and the other for returning it to normal position; of course, continuous ropes may be used, if so desired. The ropes or cords 24 pass up and over guide rollers or pulleys 26 and 27 in the upper end of the guides 11 and then extend inwardly through the front of the car where they are secured to the ends of tension springs 28 preferably arranged within the tubes 29, these tubes being secured in the top of the car by means of clamps 30. Adjustment of the springs 29 is provided by having the ends of the springs secured to slidable nuts or threaded members 31 which engage with screws 32 passing through caps 33 in the ends of the tubes 29, these screws being held in adjusted position by means of nuts 34.

The ropes 25 extend downwardly and engage with winding drums or sheaves 35 secured on a cross shaft 36 which is held by means of hangers 37 from the bottom of the car 8. The shaft 36 is provided with a pinion 38 which engages with a segmental rack 39 on the end of a lever 40 pivoted at 41 to suitable hangers or supports 42 from the bottom of the car. The opposite end of the lever 40 is slotted to receive a roller 43 in the end of a foot plunger 44 which extends upwardly through a bearing 45 in the bottom of the car, and is provided at its top with an adjustable cap 46, this



cap being held in adjusted position by means of a lock nut 47, as indicated particularly in Fig. 5. At the upper end of the bearing 45 is secured a rubber washer or buffer 48 which is engaged by the lock nut 47 when the plunger 44 is pressed downwardly to its lowermost position. A spring 49 is secured to the inner end of the lever 40 and to the bottom of the car, and is adapted to return the lever and plunger to normal position, as indicated in Fig. 1.

The particular form of my invention shown in the drawings will be readily understood from the above description. In operation, the motorman or driver presses his foot on the cap of the plunger 44, which causes the inner end of the lever 40 to be swung downwardly, thereby turning the segmental rack 39, which rotates the pinion 38, thereby causing the shaft 36 and sheaves or drums 35 to revolve and wind up the cords or cables 25. On account of the upper ends of these cables being secured to the bar of the squilgee at some distance from the centers of the trunnions 19, they cause the bar to be swung toward the window pane, thereby causing the wiper 20 to be drawn forcibly against and down across the surface of the pane. This will effectively remove any moisture, dirt or dust from the front of the pane, leaving the glass clean so that the driver or motorman may readily see out of the car. It will be noted that the spring-pressed shoes 16 will cause a sufficient friction on the sides of the guides 11 so that the forward or swinging movement of the squilgee will be effected before the carriages or guides 15 start to move downwardly, thereby insuring the close engagement of the wiper 20 with the window pane. When the plunger 44 has been moved to the end of its stroke, the operator removes his foot from the cap 46, thereby releasing the plunger and allowing the spring 49 to return the plunger and connected parts to normal position. Simultaneously, the springs 28, acting on the upwardly extending cords or ropes 24, first cause the squilgee to be raised away from the glass and against the stop pins 50, on account of the method of attachment of the clips 23, and then cause the carriages or slides 14 to be drawn upwardly, thereby returning the device to its normal position ready for the next operation.

The principal feature of my invention is to provide means for cleaning the outside of a window from within the car or vehicle, and it is obvious that various changes may be made in the details of construction, particularly of the return mechanism and also of the apparatus for causing the cleaning movement of the squilgee, and, therefore, I do not wish to be limited to the construction herein shown and described, except as may be necessary from the appended claims; but

What I claim and desire to secure by Letters Patent is:

1. The combination of a pair of guides, slides mounted in said guides, friction shoes on said slides, a window cleaning device pivotally mounted in said slides, operating cords secured to said device eccentrically from said pivots, and means for actuating said cords to reciprocate said cleaning device.

2. In a window cleaning device for railway cars or the like, the combination of guideways adjacent to the front window of the car, slides mounted in said guideways, a squilgee pivotally mounted in said slides, pulleys arranged adjacent to the top of said guideways, cords secured to said squilgee at points between the pivots and the window and extending up over said pulleys, springs engaging with said cords; a second set of cords extending downwardly from said squilgee and attached thereto at substantially the same points as the first-mentioned cords, winding drums for said last-named cords, a shaft on which said winding drums are carried, a pinion on said shaft, a lever pivoted adjacent to said pinion and having a curved rack at one end thereof engaging with said pinion, and a foot plunger engaging with the opposite end of said lever; the arrangement being such that when the foot plunger is pressed downwardly it will operate the lever, rack and winding drums to cause the last-mentioned cords to pull the squilgee downwardly and in engagement with the window pane, and upon the plunger being freed the springs will cause the first-mentioned cords to return the device to normal position.

3. In a window cleaning device for railway cars or the like, the combination of guides mounted at the sides of a window thereof, slides mounted in said guides, friction shoes on said slides, a bar pivotally mounted in said slides, a cleaning strip secured in the edge of said bar and adapted to engage at times with the window pane, clips secured to said bar at points between the pivots and the window, ropes extending upwardly from said clips, means for producing a tension on said ropes to return and hold the bar and slides in normally raised position, ropes or cords extending downwardly from said clips, drums or sheaves upon which said ropes are adapted to be wound to cause the bar to move downwardly for cleaning the window, and foot operated means for turning said drums.

4. In a window cleaning device for railway cars or the like, the combination of guides arranged at the sides of the driver's window, slides mounted in said guides, a squilgee pivotally mounted in said slides, and foot operated means adapted to be actuated by the motorman from within the car



for reciprocating said squilgee and slides and causing the squilgee to engage with the window pane when moving in one direction.

5 In a window cleaner for street cars, the combination of guideways arranged adjacent a front window of the car, slides movably secured in said guideways, means for  
10 retarding the movement of said slides, a bent plate having trunnions in the ends thereof and adjacent to the forward edge, engaging with said slides and having a cleaning strip along the rear edge adapted to engage with the window pane, upwardly extending cords  
15 attached to said plate between said trunnions and the cleaning edge, guide sheaves for said cords and springs coacting with said cords for holding the cleaner in raised position,

downwardly extending cords also attached to said plate between the trunnions and the cleaning edge, drums for winding up said  
20 downwardly extending cords, a shaft on which said drums are mounted, a pinion on said shaft, a lever having a toothed end engaging with said pinion and adapted to turn the same, a foot plunger engaging with  
25 the opposite end of said lever for depressing the same, and a spring between said lever and the car, tending to hold said lever and plunger in normal position, substantially as described.

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Witnesses:

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