

G. W. McKEE.
 CAR WINDOW CLEANING DEVICE.
 APPLICATION FILED NOV. 16, 1908.

932,051.

Patented Aug. 24, 1909.
 2 SHEETS—SHEET 1.

Fig. 1.

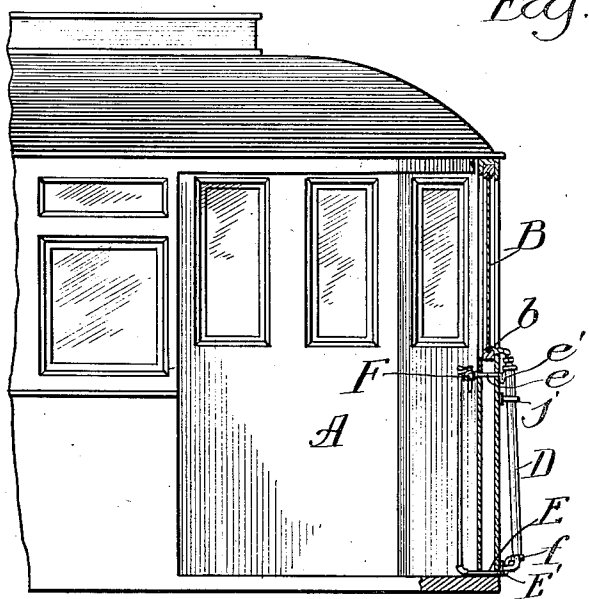


Fig. 7.

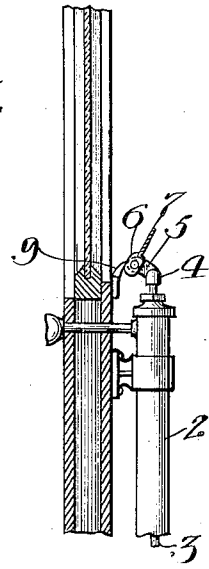


Fig. 4.

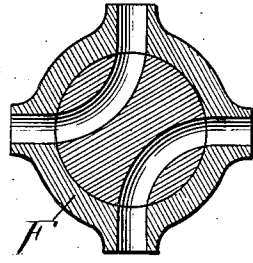


Fig. 6.

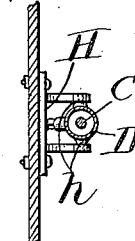
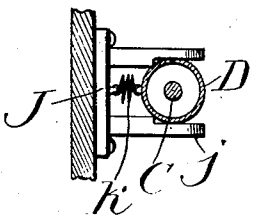


Fig. 5.



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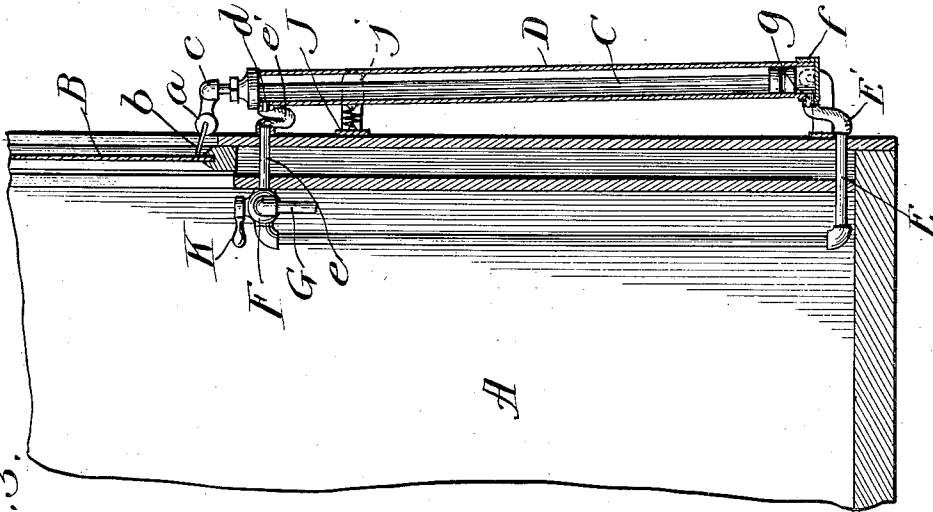


Fig. 3.

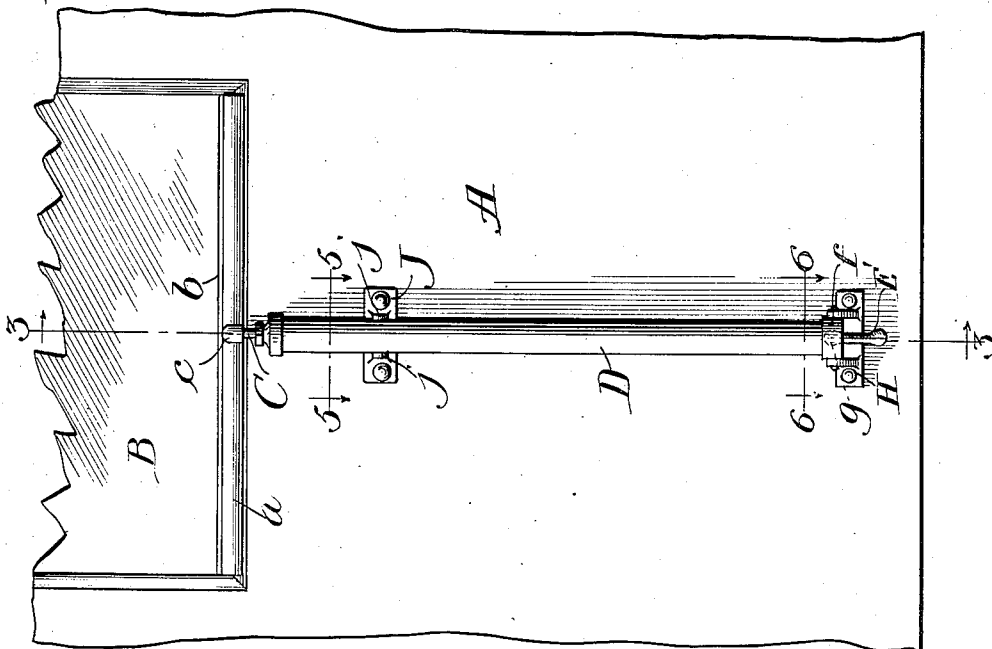


Fig. 2.

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UNITED STATES PATENT OFFICE.

GARNET W. McKEE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO FRANK E. BUTHERFORD, OF CHICAGO, ILLINOIS.

CAR-WINDOW-CLEANING DEVICE.

982,051.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed November 18, 1908. Serial No. 462,776.

To all whom it may concern:

Be it known that I, GARNET W. McKEE, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Window-Cleaning Devices, of which the following is a clear, full, and exact description.

The object of my invention is to provide a ready and convenient window-cleaner, which is attached to the outside of the car or engine cab and is operated by the motorman or engineer inside the car or cab, by air or steam pressure, without necessitating the opening of the window, and which is adapted to scrape and clean the window quickly and thoroughly. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a side view of the front end of a street car with the end-wall in section, showing my improvements applied thereto. Fig. 2 is a front view of a portion of the same drawn to a larger scale. Fig. 3 is a vertical section taken on dotted line 3, 3, Fig. 2. Fig. 4 is a section of the full sized two-way valve used in connection with my invention. Fig. 5 shows a horizontal section of my invention taken on dotted line 5—5 Fig. 2. Fig. 6 is a similar view taken on dotted line 6—6 Fig. 2. Fig. 7 is a vertical section of a fragment of the front of a car showing a modified form of my invention applied thereto.

Referring to the drawings, A represents the end portion of a street car having its platforms inclosed by a suitable vestibule, the end walls of which are provided with windows B.

When it is storming outside, or when it is very cold, objects in front of the car become very obscure to the motorman because of the rain, snow or frost collecting on the pane. To avoid this I have provided a window-scraper comprising a tubular or other suitable back *a* from which a blade *b* projects, the length of which corresponds to the width of the pane of glass in said window, and is adapted to bear against the outside of said pane at all times. This scraper is secured at about its center of length to, and projects laterally from a head *c* on the upper end of

a piston C, which latter enters and has reciprocal play in a cylinder D, preferably, arranged and secured in a vertical position in front of the car below the window. The length of piston C is such that its throw will correspond to the length of the window-pane, and, of necessity, the length of the cylinder will be greater than the piston.

At a point near the upper end of the cylinder it is provided with a combined inlet and outlet port *d*, and at or very near its lower end it is provided with a corresponding port *g*. These two ports are connected by suitable pipes *e* and *E* to a two-way valve F, which latter has one of its four openings connected to an air or steam supply-pipe G and its diametrically opposite opening used as an exhaust port.

The lower head *f* closing the lower end of cylinder D has trunnions *h* projecting laterally therefrom that are journaled in horizontal bearings in the forward ends of arms projecting from a plate H secured to the front of the car preferably just above the plane of the car floor. Near its upper end the cylinder passes between two forwardly projecting parallel guide-arms *j*, *j*, that project forward from a plate J secured to the front of said car. At a point near said plates J these arms, *j*, are provided with inwardly projecting shoulders, the distance between which is less than the diameter of the cylinder, and said cylinder is kept bearing against these shoulders when the piston is at the lower limits of its stroke, by a coil construction spring *k* connecting it and said plate J, substantially as shown.

When the scraper is bearing against the lower edge of the window-pane, the position of the cylinder will be such that it will incline from its lower pivoted end toward the car. As the scraper moves toward the limit of its upward movement, said cylinder and piston will gradually assume a more nearly perpendicular position, and the spring *k* will stretch and thus keep the scraper-blade pressing against the window-pane all the time. In view of this limited movement of the cylinder, the portion *e'* and *E'* of the pipes *e* and *E*, outside of the front of the car, are made flexible by the use of rubber or cloth hose or otherwise.

The spindle of the two-way-valve projects above the casing thereof and is provided with a handle K, and when the motorman desires to clean the window, all that is necessary for him to do is to grasp and turn the handle K, first in one direction and then the other, so as to supply the air or steam to the lower end of the cylinder through pipe E under the piston-head and force the scraper up over the window-pane and at the same time open pipe e to the exhaust port of the two-way-valve, and then into the top of the cylinder above said piston-head and open pipe E to the exhaust port of said valve, and vice versa. This operation is repeated as often as desired and until the window is satisfactorily cleaned and then the two-way-valve is turned so as to close both the inlet and outlet of said valve.

In Fig. 7 of the drawings I show a modified construction of my invention, in which the cylinder 2, is secured in an immovable vertical position in front of the car, and the piston 3, thereof, has a vertical reciprocal movement. A boss, 4, is secured to the upper end of this piston, 3, and a stub, 5, extends upward and toward the car window therefrom and has the back 6 of the scraper-blade, 7, pivotally secured thereto at about its center of length. The shape of the back of the scraper is such that when moving upward the edge of the blade will always bear against the glass,—the resistance opposed to said edge preventing the scraper from moving on its pivot. When the scraper moves downward, however, the pressure of the scraper-blade will be less than when moving upward, and when it is very near the limit of its downward movement, the back thereof will strike a spur, 9, secured to and arising from a screw-plate attached to the outer window-sill, at about midway the length of same and cause the scraper-blade to swing around on its pivot away from the window. When, however, the scraper is caused to move upward, the back of the scraper-blade, which is then nearest the spur, will be engaged thereby and caused to swing around so that the blade comes again in contact with the window.

What I claim as new is:—

1. Window cleaning mechanism for cars comprising a suitably disposed cylinder, a piston reciprocal therein, a window scraping blade substantially at right angles to the outer end of said piston, and means for controlling the movement of said piston.

2. Window cleaning mechanism for cars comprising a suitably disposed cylinder placed outside the car, a piston reciprocal therein, a horizontally disposed window-scraping blade secured substantially at right angles to the outer end thereof, and means connected with said cylinder and operated

from the inside of said car for actuating said piston.

3. Window cleaning mechanism for cars comprising a suitably disposed cylinder placed outside the car, a piston reciprocal therein, a horizontally disposed window-scraping blade secured substantially at right angles to the outer end thereof, and pneumatic means connected with said cylinder and operated from the inside of said car for actuating said piston.

4. Window cleaning mechanism for cars comprising a suitably disposed cylinder suitably secured to the outside of the car, a suitable two-way-valve connected to the air pipe system of said car, pipes connecting the respective ends of the cylinder with said valve, a piston for said cylinder, and a scraper blade secured substantially at right angles to the outer end of said piston.

5. Window cleaning mechanism for cars comprising a suitably disposed cylinder located outside and below the window thereof, a suitable two-way-valve located inside said car and connected to the air-pipe system of the same, pipes connecting said valve to the respective ends of said cylinder, the portions of which between the cylinder and the car are flexible, a piston for said cylinder and a scraper blade secured substantially at right angles to the outer end of said piston.

6. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, and means for controlling the movement of said piston.

7. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a guide for the portion of the cylinder nearest the window consisting of two parallel members secured to and projecting from the car between which said cylinder passes, and means for controlling the movement of said piston.

8. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a guide for the portion of the cylinder nearest

the window consisting of two parallel members projecting from the car and having shoulders on their inner adjacent surfaces near their support, and means for controlling

the movement of said piston.

9. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper blade secured to the outer end of said piston whose edge normally bears against the window pane, a spring connecting the portion of the cylinder nearest the window to the car, and means for controlling the movement of said piston.

10. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a guide for the portion of the cylinder nearest the window consisting of two parallel members secured to and projecting from the car between which said cylinder passes, a spring connecting the portion of the cylinder nearest the window to the car, and means for controlling the movement of said piston.

11. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a guide for the portion of the cylinder nearest the window consisting of two parallel members projecting from the car and having shoulders on their inner adjacent surfaces near their support, a spring connecting the portion of the cylinder nearest the window to the car, and means for controlling the movement of said piston.

12. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a two-way-valve located inside of the car and connected with the pipe system of the same, and pipes connecting the respective ends of said cylinder to said valve.

13. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston

for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a two-way-valve located inside of the car and connected with the pipe system of the same, and pipes connecting the respective ends of said cylinder to said valve the portions of which next said cylinder are flexible.

14. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a guide for the portion of the cylinder nearest the window consisting of two parallel members secured to and projecting from the car between which said cylinder passes, a two-way-valve located inside of the car and connected with the pipe system of the same, and pipes connecting the respective ends of said cylinder to said valve.

15. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper-blade secured to the outer end of said piston whose edge normally bears against the window-pane, a guide for the portion of the cylinder nearest the window consisting of two parallel members secured to and projecting from the car between which said cylinder passes, a two-way-valve located inside of the car and connected with the pipe system of the same, and pipes connecting the respective ends of said cylinder to said valve the portions of which next said cylinder are flexible.

16. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper blade secured to the outer end of said piston whose edge normally bears against the window pane, a spring connecting the portion of the cylinder nearest the window to the car, a two-way-valve located inside of the car and connected with the pipe system of the same, and pipes connecting the respective ends of said cylinder to said valve.

17. Window cleaning mechanism for cars comprising a suitably disposed cylinder one end of which is pivotally supported in lateral bearings outside the car and its opposite end adapted to lean toward the window, a piston for said cylinder, a scraper blade secured to the outer end of said piston whose edge normally bears against the window pane, a spring connecting the portion of the cylinder

nearest the window to the car, a two-way-
valve located inside of the car and connected
with the pipe system of the same, and pipes
connecting the respective ends of said cylin-
5 der to said valve the portions of which next
said cylinder are flexible.

In testimony whereof I have hereunto set

my hand this 12th day of November, A. D.,
1908.

GARNET W. McKEE. [L. s.]

Witnesses:

E. K. LUNDY,
M. E. MARTIN.