F. W. HOGG.

PNEUMATICALLY OPERATED WINDOW CLEANER.

APPLICATION FILED JAN. 14, 1916.

1,237,338.

Patented Aug. 21, 1917.

2 SHEETS—SHEET 1.

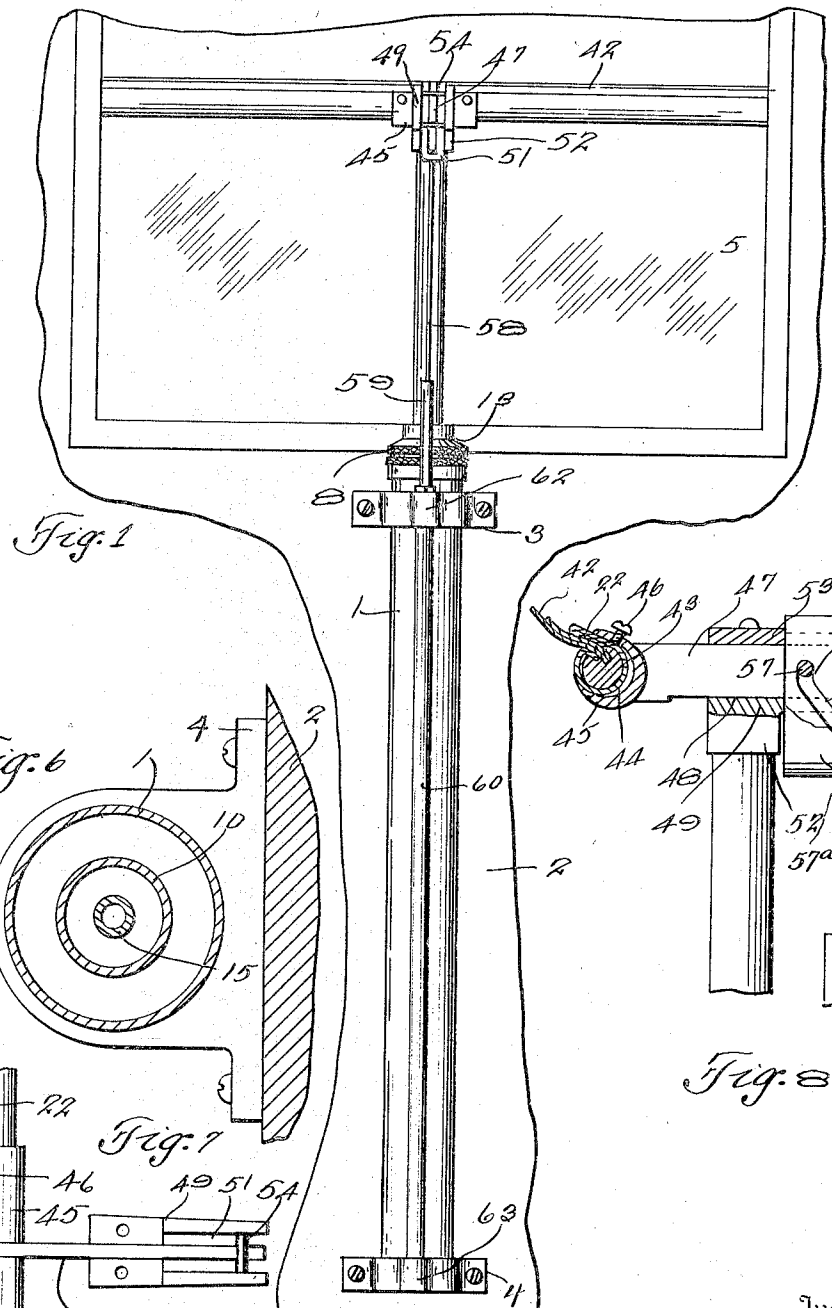

Fig. 1

Fig. 6

Fig. 7

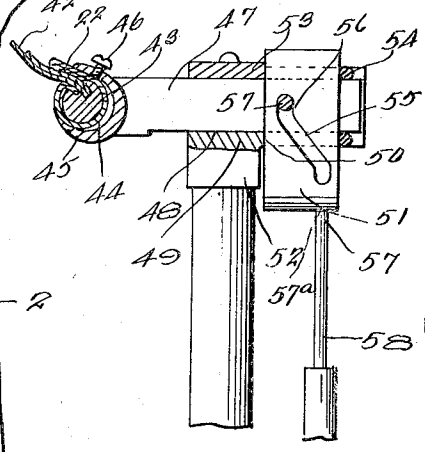

Fig. 8

Witnesses

Chas. H. Trotter

H. T. Riley

Inventor

F. W. Hogg

By A. Kaufmann Jr.

Attorney

F. W. HOGG.

PNEUMATICALLY OPERATED WINDOW CLEANER.

APPLICATION FILED JAN. 14, 1916.

1,237,338.

Patented Aug. 21, 1917.

2 SHEETS—SHEET 2.

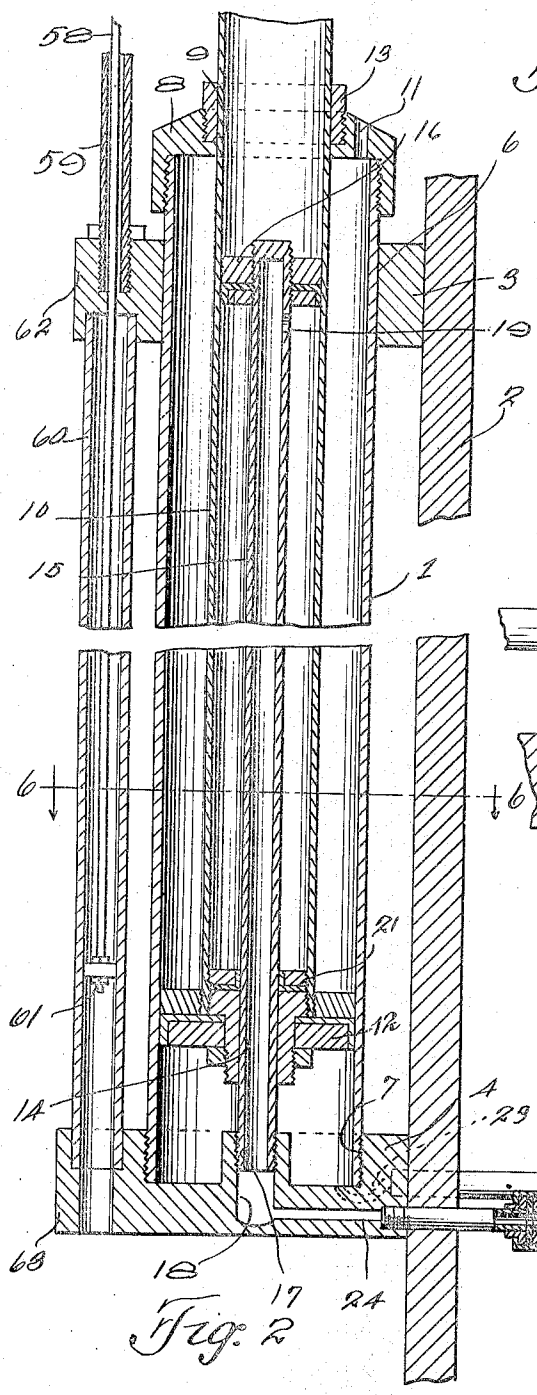

Fig. 2

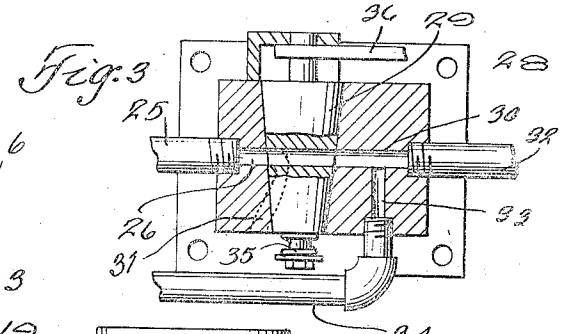

Fig. 3

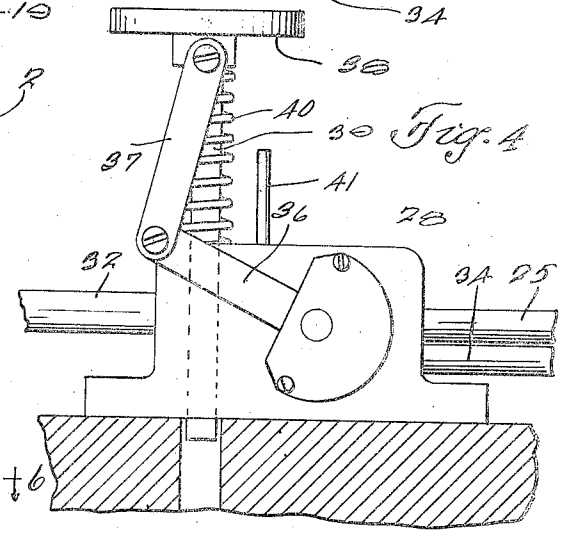

Fig. 4

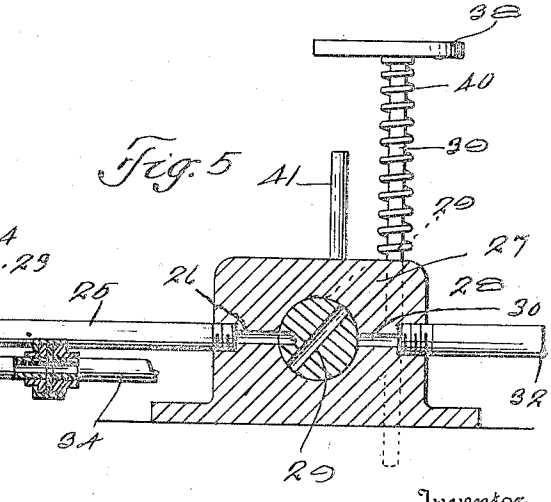

Fig. 5

Witnesses

Chas. H. Tuttle.

T. C. F. Riley

Inventor

F. W. Hogg

By A. Hardgrave Jr.

Attorney

UNITED STATES PATENT OFFICE.

FREDERIC W. HOGG, OF THE DALLES, OREGON, ASSIGNOR OF ONE-HALF TO P. A. GETZ, OF PORTLAND, OREGON.

PNEUMATICALLY-OPERATED WINDOW-CLEANER.

1,237,338. Specification of Letters Patent. **Patented Aug. 21, 1917.**

Application filed January 14, 1916. Serial No. 72,184.

To all whom it may concern:

Be it known that I, FREDERIC W. HOGG, a citizen of the United States, residing at The Dalles, in the county of Wasco and State of Oregon, have invented certain new and useful Improvements in Pneumatically-Operated Window-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in pneumatically operated window cleaners.

The object of the present invention is to improve the construction of window cleaners and to provide a simple, practical and efficient window cleaner of comparatively inexpensive construction designed for use on cars, automobiles and the like for cleaning the windows in front of the motorman or driver of a machine and adapted to be operated by compressed air of an air brake system and capable in the upward movement of the window cleaning device of carrying the same outward with respect to the glass of the window and of automatically moving the same into positive engagement with the glass of the window so as to wipe snow, sleet, moisture and other accumulation therefrom on the downward stroke of the device.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings

Figure 1 is an elevation of a pneumatically operated window cleaner constructed in accordance with this invention and shown applied in position for operating on the window car,

Fig. 2 is an enlarged vertical sectional view of the lower portion of the window cleaner,

Fig. 3 is a horizontal sectional view of the controlling valve,

Fig. 4 is a side elevation of the same partly in section,

Fig. 5 is a vertical sectional view of the controlling valve,

Fig. 6 is a horizontal sectional view on the line 6—6 of Fig. 2,

Fig. 7 is a plan view of a portion of the device, illustrating the manner of mounting the window cleaning device, the top plate of the casing being removed,

Fig. 8 is a vertical sectional view of the same.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, 1 designates a main vertically disposed cylinder designed to be arranged exteriorly of the front or dash 2 of a car, automobile or other vehicle and mounted in upper and lower brackets 3 and 4 which are bolted or otherwise secured to the front of the car below the window 5 thereof as clearly illustrated in Fig. 1 of the drawings. The upper bracket 3 is provided with an opening 6 through which the upper end of a main cylinder projects and the lower bracket 4 is provided in its upper face with a socket 7 in which the lower end of the main cylinder 1 is secured, preferably by threading as shown, but any other suitable means may be employed for mounting the main cylinder in a fixed position.

The fixed main cylinder 1 which preferably terminates at the bottom of the window 5 is provided at its upper end with a cap or head 8 having a central opening 9 for the passage of an inner vertically movable cylinder 10 and provided beyond the opening 9 with a vent 11 to permit the air to enter and escape from the main cylinder 1 above a piston head 12 which is carried by the lower end of the inner vertically movable cylinder 10. The cap 8 is also provided at the opening 9 with a gland of fiber or any other suitable material but any desired packing may of course be employed to enable the vertically movable cylinder to slide through the cap of the main fixed cylinder without wear of the metallic parts. The piston head 12 which may be of any desired construction is suitably secured to

the lower end of the vertically movable cylinder and it is provided with a cylinder opening 14 through which passes a central vertical tube 15 provided at its upper end with a head 16 and mounted at its lower end 17 in a socket or opening 18 in the lower bracket 4 into which it is preferably threaded as illustrated in Fig. 2 of the drawings but any other suitable means may of course be employed for mounting the tube 15 in a fixed position on the lower bracket.

The central tube which is provided below the head 16 at a point adjacent to the same with a port 19 constitutes a fixed piston rod for the inner vertically movable cylinder and compressed air or other fluid pressure is adapted to pass upwardly through the tube 15 and out through the port 19 into the inner cylinder 10 for operating against the upper face 21 which is of less area than the lower face of the piston head 12. By this arrangement a constant pressure may be maintained in the inner vertically movable cylinder for forcing the same downwardly and when pressure is admitted to the main cylinder below the piston head 12 the vertically movable cylinder will be forced upwardly by the superior pressure operating beneath the head 12 and when the pressure beneath the head is released, the pressure within the vertically movable cylinder will be sufficient to force the same downwardly and operate a window cleaning device 22 on the down stroke. The lower bracket 4 is provided with passages 23 and 24 communicating respectively with the lower end of the main cylinder and the lower end of the vertical tube 15. The passage 23 is connected by a pipe 25 with a passage 26 of a casing 27 of a controlling valve 28 which has a valve plug 29 operating within the casing and adapted to connect the passage 26 with a passage 30 and also with an exhaust port 31. The passage 30 communicates with a feed pipe or supply pipe 32 that is connected with the air brake system or other suitable source of fluid pressure. The valve casing is also provided with a passage 33 which connects the supply pipe 32 with a branch pipe 34 that extends from the valve casing to the passage 24 of the lower bracket 4. Any other suitable means may of course be employed for connecting the passage 24 with the supply pipe 32 to maintain a constant pressure within the vertical tube 15.

The valve plug which is preferably tapered and maintained tight by a coiled spring 35 is provided with an arm 36 which is connected by a link 37 with a foot plate 38 having a stem or rod 39 slidably mounted in the valve casing and having disposed on it a coiled spring 40 which is interposed between the valve casing and the foot plate 38. The foot plate 38 which is limited in its downward movement by a stop 41 is adapted to be depressed by the foot of the motorman or other operator to partially rotate the valve plug and carry its port or passage from the exhaust port 31 and place the feed pipe 32 in communication with the lower end of the main cylinder for forcing the vertically movable cylinder upwardly. When the cleaning device 32 reaches the top of the window the foot is removed and the arm of the valve is automatically swung upwardly by the coiled spring 40 to partially rotate the valve plug and release the pressure of the main cylinder and permit the pressure of the vertically movable cylinder to force the latter downwardly.

When the vertically movable cylinder is forced upwardly by the superior pressure of the main cylinder, the pressure of the vertically movable cylinder is forced back into the pipe.

The cleaning device 32 which may be of any desired construction is of a length to extend entirely across the window 5 and it preferably consists of a strip 42 of rubber or other suitable material set in a wooden rod or body 43 which is arranged within a metallic casing or housing 44 that is secured adjustably within a holder 45 provided with set screws 46. The body portion of the cleaning device is substantially circular in cross section and the holder 45 is curved to conform to the configuration of the cleaning device and embraces the body portion thereof as clearly illustrated in Fig. 8 of the drawings. The holder is equipped with a horizontally slidable bar or member 47 and it is automatically moved toward the window when the cleaning device reaches the limit of its upward movement and is automatically withdrawn from the window when the cleaning device reaches the limit of its lower movement. By this operation the cleaning device is moved upwardly out of contact with the glass of the window and is carried into engagement with the glass and moved downwardly over the same to scrape therefrom any accumulation thereon.

The horizontally slidable bar or member 47 is mounted in a horizontal guide or way 48 of a casing 49 which is also provided with a vertical guide or way 50 for the reception of a vertically movable slide or member 51 having an inclined guide and slidably connected with the member 47 for actuating the same in the inward and outward movement thereof. The casing 49 is provided with a depending socket 52 into which the upper end of the vertically movable cylinder is threaded and the horizontal guide 48 is formed by a groove in which the slidable bar or member 47 is retained by a removable top plate 53. The vertical guide 50 consists of an opening and the slide or member 51 which is approximately

U-shaped is composed of two sides and a bottom conecting portion and it straddles the horizontally slidable bar or member. The vertically movable slide is retained in the opening of the casing by upper and lower horizontal pins 54 located above and below the horizontally movable slide or member 47 and the inclined guides are preferably formed by slots 55 having vertical terminal portions 56 and receiving lateral projections 57 of the horizontally slidable bar or member 47. When the slide or member 51 is reciprocated vertically the horizontally slidable bar or member 47 will be reciprocated horizontally. The vertical slide or member 51 is connected to the upper end of a rod 58 extending through an upper tube 59 and into a lower tube 60 and provided at its lower end with nuts 61. The tubes 59 and 60 are mounted in projections 62 and 63 of the upper and lower brackets 3 and 4 and the tube 59 which extends upwardly from the upper bracket constitutes a stop which is arranged to be engaged by the vertically movable slide or member 51 prior to the limit of the downward movement of the inner vertically movable cylinder. This will cause a relative movement of the slide or member 51 and the cylinder and will withdraw the cleaning device from the window at the bottom thereof and at the end of the downward movement of the said cleaning device. The nuts 61 constitute a stop for engaging the upper projection 62 for limiting the movement of the slide or member 51 to check the same just prior to the limit of the upward movement of the vertical cylinder to cause a relative movement of the slide or member 51 and the vertical cylinder for actuating the horizontally slidable bar or member 47 to move the cleaning device to the glass of the window 5 at the end of the upward movement of the vertical movable cylinder. Other means may be employed for causing an automatic relative movement of the slide or member 51 and various other means may of course be employed for actuating the bar or member 47 in its sliding movement. As it requires a positive pull or push to actuate the slidable bar or member 47 there will be no liability of the said bar or member accidentally moving inwardly or outwardly. The upper end 57^a of the rod 58 is threaded into the slide or member 51 and the nuts are mounted on a threaded portion of the said rod 58 so that an adjustment of the parts may be had to secure a proper operating of the device.

What is claimed is:—

1. A window cleaner of the class described including a cleaning device, means for moving the same upwardly and downwardly comprising a fixed vertical cylinder, and a piston operating in the cylinder and carrying the cleaning device, and means for moving the cleaning device inwardly and outwardly with respect to a window at the ends of its upward and downward movement, the latter means including a slidable member carrying the cleaning device and actuating means for sliding the said member.

2. A window cleaner of the class described including a cleaning device, means for moving the same upwardly and downwardly comprising a fixed vertical cylinder and a vertically movable piston carrying the cleaning device and means for moving the cleaning device inwardly and outwardly with respect to a window at the ends of its upward and downward movement, the latter means including a horizontally movable bar or member slidably mounted on the piston and connected with the cleaning device, and a vertically movable slide having an inclined guiding portion connected with and adapted to actuate the horizontally slidable bar or member.

3. A window cleaner of the class described including a cleaning device, means for moving the same upwardly and downwardly and comprising a fixed vertical cylinder and a vertically movable piston, and means for moving the cleaning device inwardly and outwardly with respect to a window at the ends of its upward and downward movement, the latter means including a horizontally slidable bar or member mounted on and carried by the piston and carrying the cleaning device, a vertically movable slide having an inclined guiding portion connected with the horizontal bar or member and means for limiting the movement of the vertically movable slide to cause a relative movement of the parts, at the ends of the upward and downward movement of the cleaning device.

4. A window cleaner of the class described including a cleaning device, means for moving the same upwardly and downwardly comprising a fixed vertical cylinder and a vertical movable piston and means for moving the cleaning device inwardly and outwardly with respect to a window at the ends of its upward and downward movement, the latter means including a horizontally slidable bar or member guided by the piston and carried by the same and connected with the cleaning device, a vertically movable slide having spaced side portions receiving the horizontally slidable bar or member and provided with inclined slots having terminal vertical portions, means carried by the horizontally movable bar or member for engaging the slots and stops for limiting the movement of the vertically movable slide to cause a relative movement of the parts at the ends of the upward and downward movement of the cleaning device.

5. A window cleaner of the class described including a cleaning device, means for mov-

ing the same upwardly and downwardly comprising a fixed vertical cylinder and a vertically movable piston and means for moving the cleaning device inwardly and outwardly with respect to a window at the ends of its upward and downward movement, the latter means including a horizontally slidable bar or member guided on the piston and carried by the same, a vertically movable slide having means for actuating the horizontally slidable bar or member, a rod connected with the vertically movable slide and provided at its lower end with a stop, a tube forming a housing for the rod and arranged in the path of the vertically movable slide and means arranged in the path of the stop of the rod for limiting the upward movement of the vertically movable slide.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERIC W. HOGG.

Witnesses:
DAVID STEVENSON,
A. F. TAYLOR.