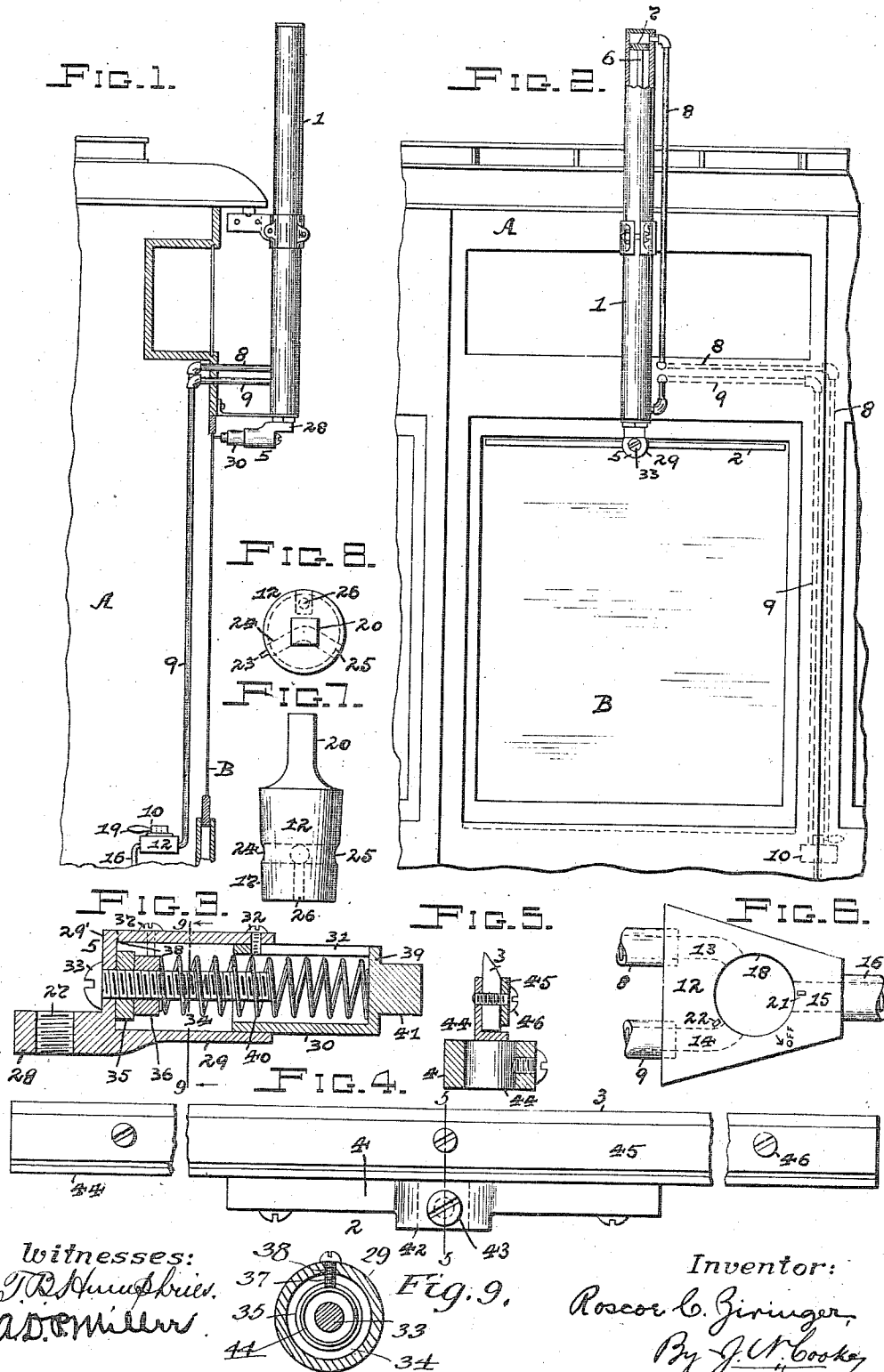


R. C. ZIRINGER.
WINDOW CLEANING DEVICE.
APPLICATION FILED OCT. 29, 1910.

1,005,918.

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Witnesses:
T. R. Humphries.
A. D. Miller.

Inventor:
Roscoe C. Ziringer,
By J. C. Cooley
Attorney.

UNITED STATES PATENT OFFICE.

ROSCOE C. ZIRINGER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO
M. G. LESLIE AND WILLIAM SAUL, BOTH OF PITTSBURGH, PENNSYLVANIA.

WINDOW-CLEANING DEVICE.

1,005,918.

Specification of Letters Patent.

Patented Oct. 17, 1911.

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To all whom it may concern:

Be it known that I, ROSCOE C. ZIRINGER, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Window-Cleaning Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to window cleaning
10 devices and has special reference to mechanically operated window cleaners, such as are operated by compressed air or steam.

The object of my invention is to provide
15 a cheap, simple and efficient form of window cleaner, which is adapted to be 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
20 the window, and which is adapted to clean the window quickly and thoroughly, when desired.

To these ends my invention consists, generally stated, in the novel construction, arrangement and combination of parts, as
25 hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to
30 which my invention appertains to construct and use my improved window cleaner, I will describe the same more fully, referring to the accompanying drawing, in which—

Figure 1 is a side view of a portion of
35 a street car cab with the end wall in section, and showing my improved window cleaner attached thereto. Fig. 2 is a front view of the same. Fig. 3 is a longitudinal central section of the attachment used for
40 regulating the pressure of the cleaner against the window pane. Fig. 4 is a top plan view of the scraping attachment. Fig. 5 is a central cross-section of the same on the line 5—5 Fig. 4. Fig. 6 is a plan view of
45 the valve block for operating the admission of compressed air or steam to the cylinder employed. Fig. 7 is a side view of the valve for fitting into the valve block. Fig. 8 is a top plan view of the same. Fig. 9 is a
50 cross section on the line 9—9, Fig. 3, looking in the direction of the arrows.

Like symbols of reference herein indicate like parts in each of the figures of the drawing.

55 As illustrated in the drawing, A repre-

sents 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.

During stormy weather, or when it is
60 very cold, it is very objectionable to the motorman or engineer to repeatedly have to stop the car or engine in order that he may go out of the cab to clean the frost, snow or rain from the front windows of
65 the same for observation of the track ahead, and this is necessary every few minutes, especially during a heavy snow storm, as objects in front of the car or engine become very indistinct when the windows are thus
70 covered with snow, etc. To overcome this objection I have provided a window cleaning apparatus comprising a cylinder or tube 1 from which a scraper attachment 2 projects, and said scraper is adapted to hold a
75 strip of rubber or other suitable flexible material 3 for producing a steady even pressure on the window pane. This scraper 2 is provided at about its center with a securing portion 4 which is adapted to be fastened to the pressure attachment 5 and such attachment is secured to the end of a piston
80 rod 6 which protrudes from the cylinder 1.

Within the cylinder 1 is the piston 7, which is secured to the piston rod 6, and
85 said rod extends substantially the entire length of said cylinder, while such length is regulated by the height of the window pane to be cleaned. The cylinder 1 is also provided with the pipe 8 leading into its
90 upper end and the pipe 9 leading into its lower end for the admitting and the exhausting of the compressed air or steam respectively, as employed in operating the same, and said pipes lead to a valve arrangement
95 10 conveniently located on the inside of the cab A, whereby the admission and exhaust are controlled. The valve arrangement 10 is composed of the valve block 11 and the valve 12 and said valve block is provided
100 with the ports 13 and 14 in the rear end of the same for connection to the pipes 8 and 9 respectively, while the front end of said block is provided with the port 15 for connection to a pipe 16 leading from the supply
105 tank of compressed air or steam. The valve 12 is of circular shape, and is slightly tapered in its body portion 17, so that such body portion will fit in the opening 18 of the valve block 11 and be revolved therein
110

by means of a handle 19 which is fitted over the shank portion 20 of said valve. The movement of the valve 12 in the valve block 11 is limited to the shortest distance between the stops 21 and 22 on said valve block, against which a finger 23 on said valve is adapted to strike, and such valve is also provided with the passageways 24 and 25 and the exhaust port 26, as hereinafter described. The pressure attachment 5 is connected to the outer end of the piston 6 by means of the threaded portion 27 in the lug 28 of the barrel portion 29 of said attachment and said barrel portion is provided with a movable portion 30 for slidably fitting into the same, such slidable movement being limited by means of the slot 31 in said movable portion and the set screw 32 in said barrel portion.

In the front end 29' of the barrel portion 29 is the bolt 33, which extends in the hollow interior 34 of said portion and said bolt is provided with a nut 35 on the same and with a loose collar 36, which is adapted to be movable on said bolt by means of turning said nut, while said collar is held in its desired position by the set screw 37 engaging the same and extending through a slot 38 in said barrel 29, so that said screw will remain in line with said collar through the medium of said slot. Between the collar 36 in the barrel portion 29 and the end wall 39 in the movable portion 30 is the spiral spring 40, the tension of which is regulated by means of the collar 36, and which collar may be adjusted to any desired position.

The end wall 39 of the movable portion 30 is provided with a circular lug 41, which fits into the circular hole 42 on the securing portion 4 of the scraping device 2, to form a pivotal connection for said device and is secured therein by means of the set screw 43, so that said scraping device may be adjusted thereby to any angle desired, while the holder 44 of said scraping device is provided with the plate 45 and set screws 46 for adjusting said holder to any desired width in order to accommodate any size of the rubber strips 3 or other resilient material placed in said holder.

To operate my improved window cleaner, the cylinder 1 can be placed and secured above or below the window B of the car or engine cab A in any suitable manner, and as shown it is held above the same by the clamping device C connected to the roof A', so that the scraping device 2 rests on the upper end of the window pane when the piston rod 6 is inclosed in said cylinder. The handle 19 is then operated from its "off" position to the position where the finger 23 rests against the stop 21 so that the air or steam passes from the supply pipe 16 and the port 15, passes through the passage-

ways 24 and 25, the port 13 and the pipe 8 and enters the cylinder 1 at the rear of the piston 7 pressing the piston rod outwardly and thus forcing the scraping device 2 down over the window pane. The handle 19 is then turned so that the finger 23 rests against the stop 22 and the air or steam will be admitted through the port 15, the passageways 25 and 24, the port 14 and the pipe 9, and will enter at the front of the piston 7 and thus force the said piston to the other end of the cylinder 1, and with it the scraping device 2 to its normal raised position, while the air on the reverse side of said piston will be forced outward through the pipe 8, the port 13 and will be exhausted through the exhaust port 26.

It will thus be seen that my improved window cleaner can be operated very quickly and without any trouble to the operator, and the parts being few and simple will thereby eliminate the trouble arising from the parts getting out of order.

The device is positive in its movement, convenient to operate at any time desired, and will perform its work rapidly and thoroughly, as often as is required.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A window cleaning device comprising a suitably disposed cylinder, a piston within said cylinder, a piston rod connected to said piston and having one of its ends passing through one end of said cylinder, a scraping blade for engaging with the window, a stationary barrel member connected to said piston rod end, a hollow movable member fitting in said barrel and connected to said blade, a spring within said barrel and member for holding said blade against the window, and means for controlling the movement of said piston.

2. A window cleaning device comprising a suitably disposed cylinder, a piston within said cylinder, a piston rod connected to said piston and having one of its ends passing through one end of said cylinder, a scraping blade for engaging with the window, a stationary barrel member connected to said piston rod end, a hollow movable member fitting in said barrel and connected to said blade, a spring within said barrel and member for holding said blade against the window, means for regulating the tension on said spring, and means for controlling the movement of said piston.

3. A window cleaning device comprising a suitably disposed cylinder, a piston within said cylinder, a piston rod connected to said piston and having one of its ends passing through one end of said cylinder, a scraping blade for engaging with the window, a stationary barrel member connected to said piston rod end, a hollow movable member fitting in said barrel and con-

connected to said blade, a spring within said barrel and member for holding said blade against the window, a screw bolt extending into said barrel and having a loose collar thereon, a nut engaging with said collar for regulating the tension on said spring, and means for controlling the movement of said piston.

4. A window cleaning device comprising a suitably disposed cylinder, a piston within said cylinder, a piston rod connected to said piston and having one of its ends passing through one end of said cylinder, a scraping blade for engagement with the window, a stationary barrel member connected to said piston rod end, a hollow movable member fitting in said barrel and connected to said blade, a spring within said barrel and member for holding said blade against the window, a screw bolt extending into said barrel and having a loose collar thereon engaging with said spring, a nut engaging with said collar for regulating the tension on said spring, means for holding said collar in position, and means for controlling the movement of said piston.

5. A window cleaning device comprising a suitably disposed cylinder, a piston within said cylinder, a piston rod connected to said piston and having one of its ends passing through one end of said cylinder, a scraping blade for engaging with the window, a sta-

tionary barrel member connected to said piston rod end and having a slot therein, a hollow movable member fitting in said barrel and connected to said blade, a spring within said barrel and member for holding said blade against the window, a screw bolt extending into said barrel and having a loose collar thereon engaging with said spring, a nut on said bolt engaging with said collar for regulating the tension on said spring, a set screw passing through said slot engaging with said collar to hold said collar in piston, and means for controlling the movement of said piston.

6. A window cleaning device comprising a suitably disposed cylinder, a piston within said cylinder, a piston rod connected to said piston having one of its ends passing through one end of said cylinder, a scraping blade for engaging with the window, means connected to said blade and to said piston rod for holding said blade against the window, means for pivotally adjusting said blade at any desired angle against the window, and means for controlling the movement of said piston.

In testimony whereof, I, the said Roscoe C. ZIRINGER, have hereunto set my hand.

ROSCOE C. ZIRINGER.

Witnesses:

HAZEL WIBERLY,
J. N. COOKE.