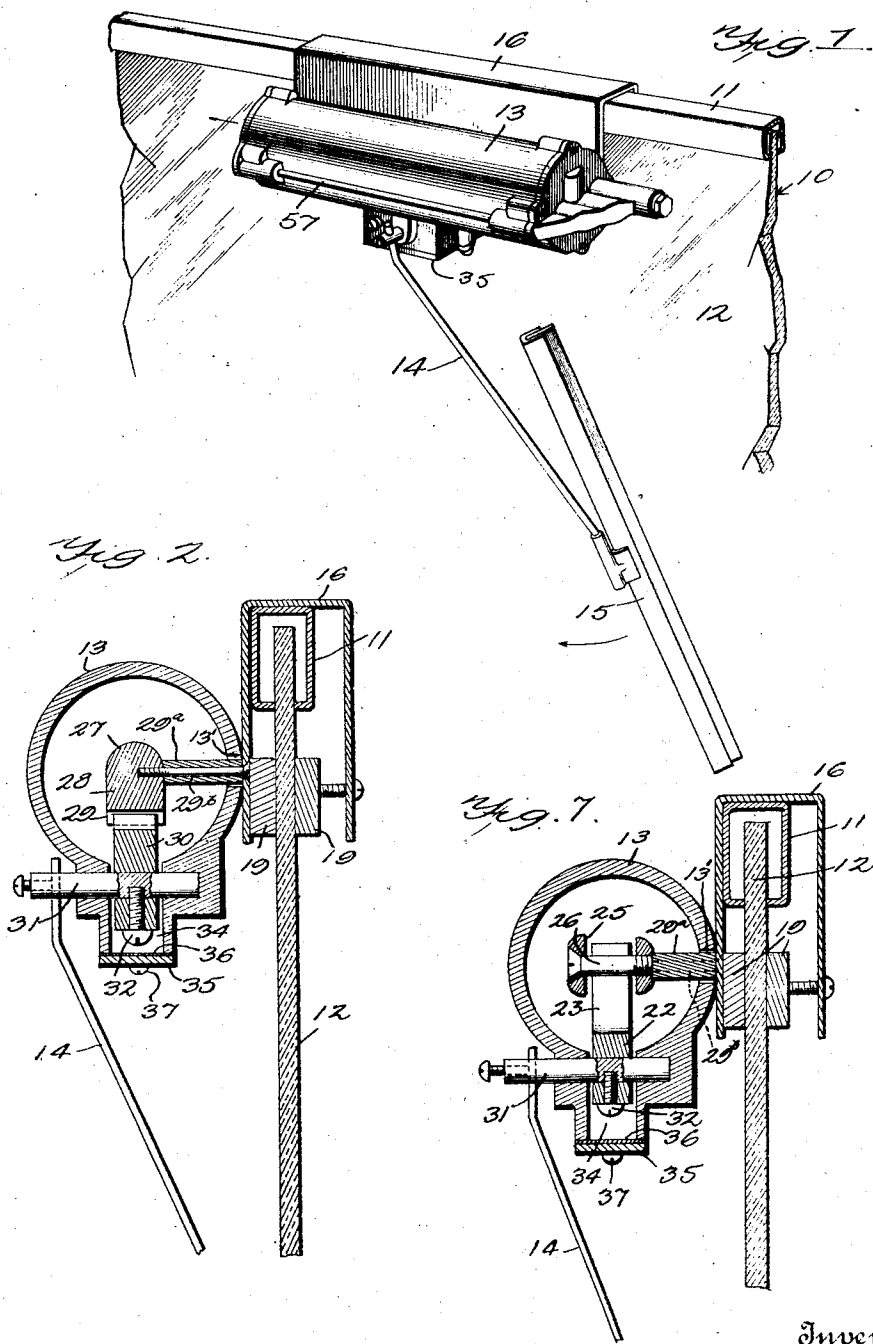


W. M. FOLBERTH.
WINDSHIELD CLEANER.
APPLICATION FILED OCT. 4, 1919.

1,352,504.

Patented Sept. 14, 1920.

2 SHEETS—SHEET 1.



Inventor
W. M. Folberth

By

Ch. Parker

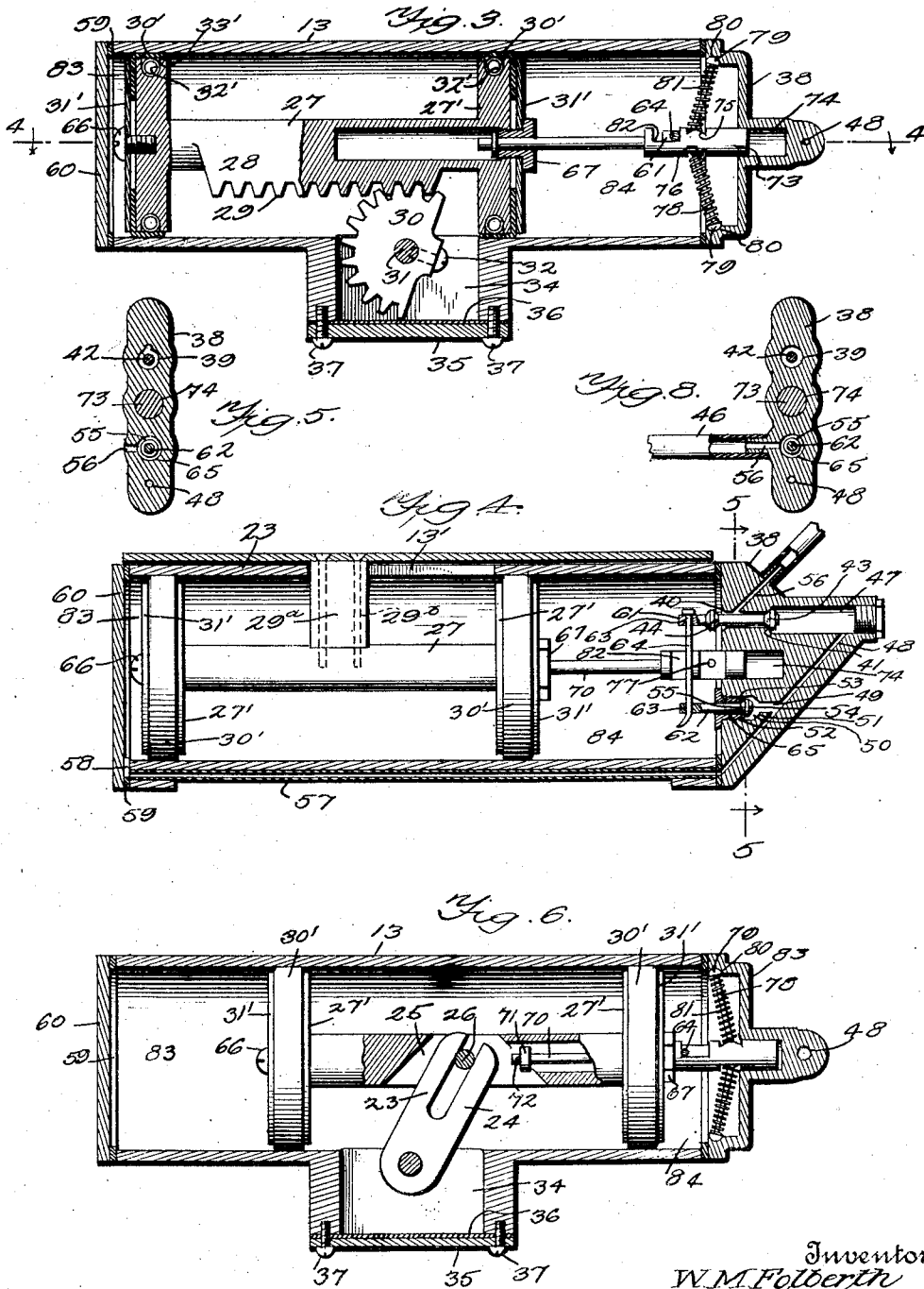
Attorney

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UNITED STATES PATENT OFFICE.

WILLIAM M. FOLBERTH, OF CLEVELAND, OHIO.

WINDSHIELD-CLEANER.

1,352,504.

Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed October 4, 1919. Serial No. 328,560.

To all whom it may concern:

Be it known that I, WILLIAM M. FOLBERTH, a citizen of the United States, residing at Cleveland, Ohio, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Windshield-Cleaners, of which the following is a specification.

This invention relates to new and useful improvements in wind shield cleaners.

An important object of the invention is to provide a device of the above mentioned character adapted for operation through the medium of a suitable suction producing means, as for example the intake manifold of an internal combustion engine, the intake pipe of an air pump or the like.

A further object is provision of means whereby the cleaning attachment is kept in correct alinement with the window or glass of the wind shield to be cleaned.

A further object is a provision of a device of this character having a cleaning attachment presenting the smallest possible obstruction to the vision of the operator of the vehicle.

A further object is to provide means for simultaneously oscillating and transversely shifting the cleaning element whereby the surface cleaned by the cleaning element is greatly enlarged.

Other objects and advantages will be apparent throughout the course of the following description.

In the drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein like numerals designate like parts throughout,

Figure 1 is a perspective view of my apparatus attached to the wind shield of an automobile.

Fig. 2 is a transverse section taken through my device.

Fig. 3 is a longitudinal section thereof.

Fig. 4 is a section taken on the line 4—4 of Fig. 3.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a longitudinal section through a modified form of my apparatus.

Fig. 7 is a section on the line 7—7 of Fig. 6 and

Fig. 8 is a detail view similar to the section shown in Fig. 5 showing the method of connecting my apparatus for operation by fluid pressure.

Referring now more particularly to the drawings the numeral 10 indicates a wind shield as a whole, comprising the usual frame 11 receiving a pane 12 or the like.

The numeral 13 indicates a suitable cylinder having means therein to oscillate a cleaner bar 14 adapted to releasably receive a cleaning element 15. The cylinder 13 is mounted upon the wind shield or the like in a manner hereinafter described. A bracket 16 is provided shown in the present instance as being U-shaped in form and disposed about the upper surface of the wind shield and frame thereof. This bracket will be made of sufficient size to allow the reception of wind shields of various standard makes of automobiles and is secured in position on the wind shield by means of clamping blocks 19, formed of wood, rubber or the like, one of the clamping blocks being adjustably positioned by means of a clamping screw or the like. The cleaning bar 14 is formed of spring metal or the like, thus maintaining the cleaning element in firm engagement of the pane 12.

Mounted within the cylinder 13 is a pair of pistons 26, connected by a member 27. The connecting element 27 is provided upon one side thereof with a depending portion 28, having a rack 29 formed thereon. The rack 28 engages a segmental gear 30 pivoted upon a rock shaft 31, the gear being secured to the rock shaft by means of a screw 32 or the like.

In the form shown in Figs. 5 and 6 the segmental gear 30 is replaced by a bar 22 having a bifurcated end forming arms 23 and 24. A slot 25 is formed in the connecting element 27 to receive the arms 23 and 24 and a transverse pin 26 mounted in the connecting element is received by the arms.

In the outer end of the rock shaft 31 an aperture is provided adapted to receive the cleaning bar 14, the bar being held in position by means of a screw or the like.

Secured to the connecting element 27 is an extension 29^a the extension being secured to bracket 16 by means of screws 29^b. This extension operates within a slot 13' formed in the wall of the cylinder 13.

It will readily be seen that, if power is applied within the cylinder causing the cylinder 13 to reciprocate that the rock shaft 31 is oscillated through means of the segmental gear 30 and the cleaning bar 14, is thereby simultaneously oscillated in contact with the window 12 and shifted transversely in the direction of oscillation.

The segmental gear 30 operates in an oil well 34 closed by plate 35, and a gasket 36, held in position by screws 37. It will be seen that at each oscillation of the segmental gear a portion of the oil from the well is picked up and disposed upon the teeth of the rack 29 from whence it will be deposited upon the wall of the cylinder 13, thus affording lubrication to the cylinder.

The pistons 27' are provided with packing 30' consisting in the present instance of a cup leather held in position by a clamping plate 31'. The packing is expanded by means of coiled springs 32', mounted in grooves 33' formed in the periphery of the piston.

One end of the cylinder is provided with a head 38 having formed therein a passage 39. The passage 39 has valve seats 40 and 41 formed upon its opposite ends and is adapted to receive a double end valve 42, having formed upon the opposite ends thereof, valves 43 and 44 adapted to coact with the seats 41 and 40 respectively. The passage 39 communicates with a passage 45 communicating in turn with conduit 46 connected with any suitable suction producing means. The passage 39 also communicates with a passage 47 having its outer end closed by a plug 47'. It will be observed that the passage 47 closed by the plug 47' allows of inspection or removal of the double ended valve 42. A conduit 48, communicates with the passage 47. A passage 49 communicates with the conduit 48. The passage 49 has an enlarged portion 50, having formed thereon a valve seat 51. The enlarged portion 50 is provided with screw threads adapted to receive the threads of a sleeve 52, having formed thereon a valve seat 53 opposing the valve seat 51 of the enlargement 50 of the passage 49. A member provided with opposed valves 54 and 55 is provided, the valves 54 and 55 co-acting with the seats 51 and 53 respectively. Intermediate the seats 51 and 53, the enlargement 50 of the passage 49 communicates with the passage 56, which in turn communicates with the atmosphere.

The conduit 48 communicates with the conduit 57 which in turn communicates by

means of a passage 58 formed in the packing 59 intermediate the opposite end of the cylinder and the head 60 thereof. It will be seen that if the valves 43, 44 and 54, 55 are simultaneously shifted the opposite ends of the cylinders are alternately placed in communication with the suction producing means, and the atmosphere. The valves 43, 44 and 54, 55 are provided with stems 61 and 62 respectively having formed therein apertures 63 adapted to receive a pin 64 or the like. The stem 62 of the valves 54, 55 extends through an opening 65 of the sleeve 52. By examining Figs. 8 and 10 it will be seen that this opening is square in cross section allowing the passage of the air into the cylinder when the conduit 56 is placed in communication therewith.

While I have shown the clamping plate of one of the pistons 26 as held in place by a clamping screw 66, the clamping plate of the piston adjacent the head 38 is held in position by means of a sleeve 67, having an aperture 68 therein communicating with a longitudinal opening 69 formed in the connecting member 27. A plunger 70 is provided which extends through the opening 68 of the sleeve 67 into the aperture 69 of the member 27. Within the opening 69, the plunger 70 is provided with a collar 71 held in position by means of a cotter pin 72 or the like.

The other end of the plunger is provided with an enlarged portion adapted to operate within a guide 74 formed in the head 38, the enlarged portion 73 is provided upon opposite sides thereof with recesses forming cam faces 75 and 76. An aperture 77 extends through the enlarged portion 73 connecting the high points of the cam faces 75 and 76, as will clearly be seen by inspecting Fig. 6. The pins 78 having semispherical heads 79 seated in concavities 80 formed in the head 38 are provided. The inner ends of the pins 78 enter the aperture 77 of the enlarged portion 73. Springs 81 are provided extending intermediate the heads 79 of the pins and the cam faces 75 and 76, of the enlarged portion 73, the springs 81 surrounding pins 78. The enlarged portion 73 of the plunger is provided upon one side thereof with a recess 82 adapted to receive the pin 64 connecting the valve stem 61 and 62 respectively. The operation of my device is as follows:

With the pistons in the position shown in Fig. 6 and the valves in the position opposite to that shown in Fig. 4, the end 83 of the cylinder 13 is in communication with the suction producing means through medium of passage 39 and 47, conduits 48 and 57, and passage 58. The end 84 of the cylinder is in communication with the atmosphere, by medium of passage 56 enlargement 50 of the

passage 49 and passage 65. When the valves are in the positions shown in Fig. 4, the end 84 of the cylinder is in communication with the suction producing means through the medium of passage 39, and the end 83 of the cylinder is in communication with the atmosphere through the medium of enlargement 50 of the passage 49, passage 49 conduits 48 and 57 and by passage 58. When the valves are in this position the cylinder is shifted to the left by the suction producing means, and the enlargement 73 is contacted by the sleeve 67 of the right hand piston. This contact will force the plunger 73 into the slot 74. As soon as the plunger arrives at a point midway of its travel, the springs 81 act against the cam faces causing the plunger to shift suddenly beyond dead center. It will be noted that the only condition whereby dead center could be formed in the device would be by the pin 64 maintaining a position intermediate the length of the recesses 82 of the enlarged portion 73. The shift caused by the springs working on the cam faces absolutely prevents such positioning from occurring, and consequently overcomes all liability of a dead center. When the cylinder is traveling in the opposite direction or the end 83 thereof moving toward the pistons 26 the washer 71 is contacted by the inner end of the sleeve 67 and the plunger drawn out past center thereby, further action of the plunger being transmitted thereto by the spring 81 as previously described.

While I have described my apparatus as being operated through medium of a suction producing means it will of course be understood that by connecting the passage 56 with a suitable source of fluid pressure, by means of a conduit 16' and placing the conduit 39 in communication with the atmosphere, efficient operation of the device would result and I accordingly do not limit myself to the suction producing means as a power medium.

As many changes are possible in the shape, size and arrangement of the parts shown, I do not limit myself to the specific construction described, but may make any such changes without departing from the spirit of the invention or the scope of the subjoined claims.

What I claim is:

1. In apparatus for cleaning wind shields, a reciprocatory cylinder, a cleaning element carried by said cylinder, and means operated by the reciprocation of said cylinder for oscillating said cleaning element.

2. In apparatus for cleaning wind shields, a cylinder, means for reciprocating said cylinder, a cleaning element carried by the cylinder, a stationary piston within the cylinder and means carried by said piston for

oscillating said cleaning element when the cylinder is reciprocated.

3. In apparatus for cleaning wind shields, a reciprocatory cylinder, means for reciprocating said cylinder, a cleaning element carried by the cylinder, a stationary piston within the cylinder, means carried by said piston for oscillating said cleaning element when the cylinder is reciprocated, the direction of oscillation of said cleaning element being the same as the direction of reciprocation of the cylinder.

4. In apparatus for cleaning wind shields, a bracket adapted for attachment to a wind shield, a cylinder, a piston mounted within said cylinder, a slot being formed in said cylinder, means connecting said piston and said bracket extending through said slot, a cleaning element carried by said cylinder, and means connecting said cleaning element and said piston whereby said cleaning element is oscillated when the cylinder is reciprocated.

5. In apparatus for cleaning wind shields, a bracket adapted for attachment to a wind shield, a cylinder, a piston mounted within said cylinder, a slot being formed in said cylinder, means connecting said piston and said bracket extending through said slot, a cleaning element carried by said cylinder, means for reciprocating said cylinder, and means connecting said cleaning element and said piston, whereby said cleaning element is oscillated when the piston is reciprocated, the direction of oscillation of said cleaning element being the same as the direction of reciprocation of said cylinder.

6. In apparatus for cleaning wind shields, a supporting bracket, a cylinder, a pair of spaced pistons within said cylinder, an element connecting said pistons, a slot being formed in said cylinder, a member connected with said piston and extending through said slot adapted for attachment to said bracket, a cleaning element carried by said cylinder, and means connecting said cleaning element and pistons whereby the cleaning element is oscillated when the cylinder is reciprocated.

7. In apparatus for cleaning windshields, a member mounted to reciprocate, a cleaning element pivoted thereto and means operated by the reciprocation of said member for oscillating said cleaning element.

8. In apparatus for cleaning windshields, a member mounted to reciprocate, a cleaning element pivoted thereto and means operated by the reciprocation of said member for oscillating said cleaning element, the direction of oscillation being the same as the direction of reciprocation of said cylinder.

9. In apparatus for cleaning windshields, a member mounted to reciprocate, a cleaning element pivoted thereto to oscillate, a sta-

tionary member and means connecting said stationary member and said cleaning element whereby said cleaning element is oscillated when said first named member is
5 reciprocated.

10. In apparatus for cleaning windshields, a member mounted to reciprocate, a cleaning element pivoted thereto to oscillate, a sta-

tionary toothed rack, and a gear connected with said cleaning element and meshing with 10 said rack.

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Witnesses:

MAXWELL F. FOURNIER,
HAROLD H. BARNES.