

C. A. BRIDGWOOD.
 CLEANING DEVICE.
 APPLICATION FILED OCT. 16, 1917.

1,274,983.

Patented Aug. 6, 1918

2 SHEETS—SHEET 1.

Fig. 1.

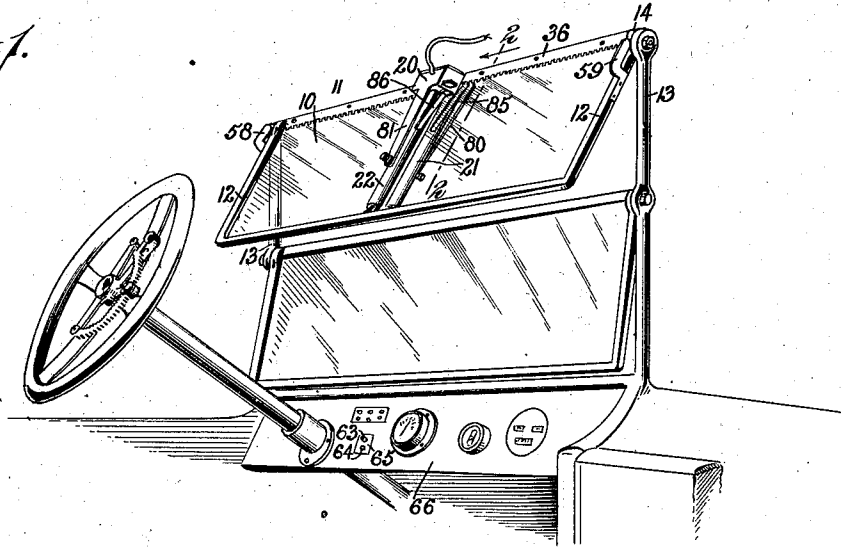


Fig. 2.

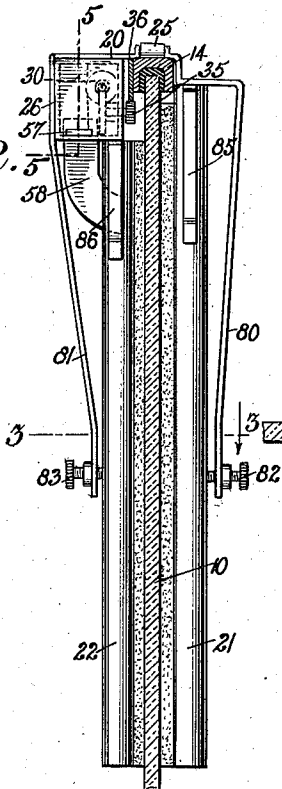
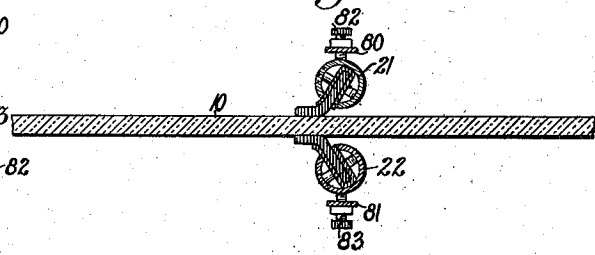


Fig. 3.



WITNESSES

Geo. W. Taylor
Rev. J. H. Hester

INVENTOR
 C. A. Bridgwood

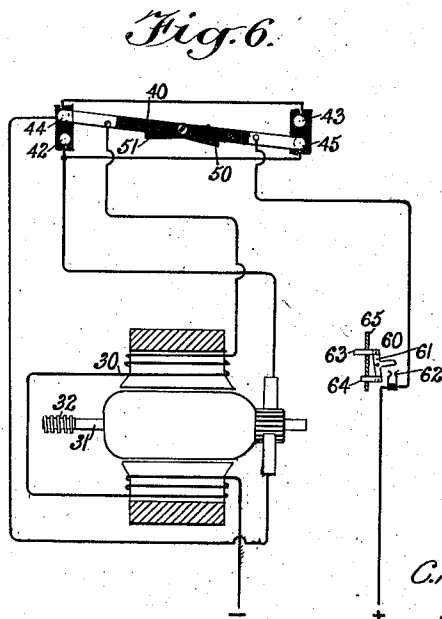
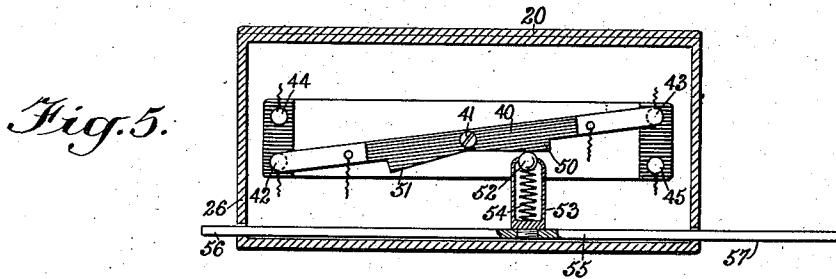
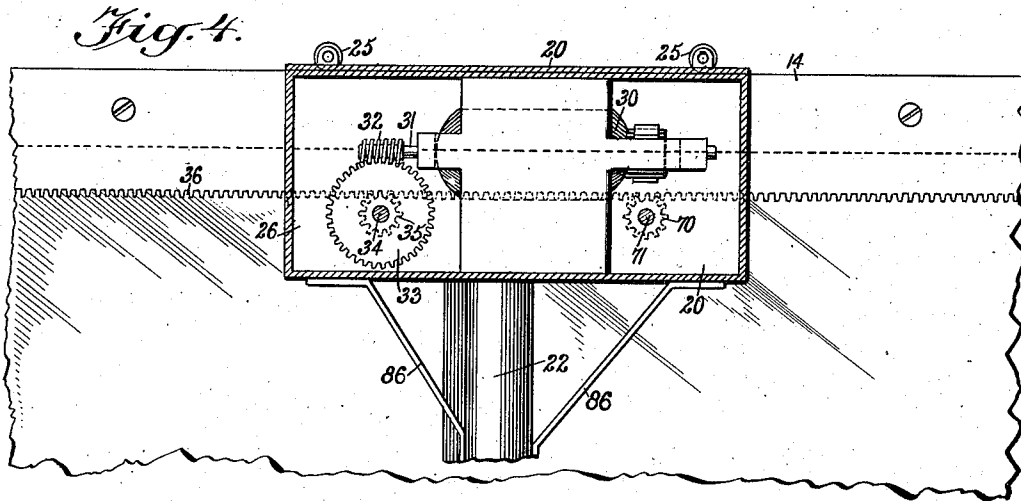
BY *Wm. L. ...*
 ATTORNEYS

C. A. BRIDGWOOD.
 CLEANING DEVICE.
 APPLICATION FILED OCT. 16, 1917.

1,274,983.

Patented Aug. 6, 1918.

2 SHEETS—SHEET 2.



WITNESSES

Geo. W. Taylor
Neely H. Hester

INVENTOR
C. A. Bridgwood

BY *Wm. Co.*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLOTTE A. BRIDGWOOD, OF WESTWOOD, NEW JERSEY.

CLEANING DEVICE.

1,274,983.

Specification of Letters Patent.

Patented Aug. 6, 1918.

Application filed October 16, 1917. Serial No. 196,879.

To all whom it may concern:

Be it known that I, CHARLOTTE A. BRIDGWOOD, a subject of the King of Great Britain, and a resident of Westwood, in the county of Bergen and State of New Jersey, have invented a new and Improved Cleaning Device, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved cleaning device for cleaning the wind shields of power driven vehicles such as automobiles, trolley cars, locomotives and the like, also for cleaning semaphores and other surfaces liable to be blurred or coated by rain, snow, or other precipitations, or by dust or other extraneous matter. Another object is to provide a simple and very effective cleaning device which forms a permanent part of the article to be cleaned and one that enables the driver or operator to start the cleaning device at any time and allow it to perform its functions a number of times over the same surface, and especially in wind shields, to clean both the outer and inner faces thereof of any moisture, sleet, snow, dust or other extraneous matter, and without the driver or other operator being required to pay any attention to the cleaning device and without the latter interfering with the running of the vehicle or with the manipulation of the article to which the cleaning device is applied. Another object is to provide a cleaning device which can be readily applied to the article to be cleaned without materially changing the construction thereof.

With these and other objects in view, the cleaning device consists essentially of a carriage having a fixed range of travel on the article, wiping means carried by the said carriage, and engaging the surface to be cleaned, and a motor mounted on the carriage and imparting a traveling motion thereto.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the cleaning device as applied to the wind shield of an automobile;

Fig. 2 is an enlarged sectional side elevation of the same on the line 2—2 of Fig. 1;

Fig. 3 is a sectional plan view of the wip-

ing elements in contact with the faces of the article to be cleaned;

Fig. 4 is an enlarged sectional side elevation of the cleaning device, as applied;

Fig. 5 is a similar view of the reversing switch for the motor, the section being on the line 5—5 of Fig. 2; and

Fig. 6 is a diagrammatic view of the motor, the automatic reversing switch and the starting and stopping switch.

The glass plate 10 of the upper wind shield 11, shown in Figs. 1, 2 and 4, is provided with the usual frame 12 mounted to swing at its upper end on the usual wind shield standards or brackets 13, as plainly indicated in Fig. 1. The upper member 14 of the wind shield frame 12 forms a longitudinal track for a carriage 20 to travel on alternately in opposite directions, that is, from one side of the wind shield to the other. The carriage 20 is provided with depending wiping devices 21 and 22 engaging the outer and inner surfaces of the glass plate 10 to wipe the said surfaces during the travel of the carriage from one side of the wind shield to the other and back as many times as desired by the operator and as hereinafter more fully explained.

In order to facilitate an easy traveling of the carriage 20 on the track 14, formed by the top frame member of the wind shield, use is made of rollers 25 journaled on the top of the carriage 20 and traveling on the top of the frame member 14. The carriage 20 is provided with a casing 26, preferably located at the inner side of the wind shield, and in this casing 26 is mounted an electric motor 30 of the reversible type. The shaft 31 of the motor is provided with a worm 32 (see Fig. 4) in mesh with a worm wheel 33 secured on a transverse shaft 34 journaled in suitable bearings within the casing 26. On the shaft 34 is secured a pinion 35 in mesh with a rack 36 secured to or forming part of the upper frame member 14. Thus when the motor is running a turning motion is given to the pinion 35 and as the latter is in mesh with the fixed rack 36 it is evident that the carriage 20 is caused to travel on the track formed by the upper frame member 14.

In order to reverse the motor 30 whenever the carriage nears the end of its travel in either direction, use is made of a switch lever 40 fulcrumed at 41 and adapted to

engage alternately contacts 42, 43, and 44, 45 arranged in the motor circuit, as plainly shown in Figs. 5 and 6. The switch lever 40 is provided with two inclines 50 and 51 engaged by a ball 52 held in a cage 53 and pressed on by a spring 54 mounted in the said cage. The cage 53 is attached to a shifting rod 55 mounted to slide lengthwise in the casing 26 of the carriage 20, and the ends 56 and 57 of the said switch rod 55 extend beyond the sides of the casing 26. The end 56 of the switch rod 55 is adapted to move in engagement with a spring arm 58 held on one side of the frame 12, and the end 57 of the said switch rod 55 is adapted to engage a similar spring arm 59 attached to the other side of the frame 12. When the carriage 20 travels, say from the left to the right, and nears the end of its travel in this direction then the end 57 of the switch rod 55 engages the spring arm 59 whereby the rod 55 is shifted from the right to the left and in doing so the ball 52 moves out of engagement with the incline 50 and into engagement with the incline 51 thus imparting a rocking motion to the switch lever 40 to disengage the same from the contacts 42, 43 and to engage the same with the contacts 44, 45 thus reversing the motor 30. The carriage 20 is now caused to travel from the right to the left, and when the carriage nears the end of its travel in this direction then the end 56 of the shifting rod 55 engages the spring arm 58 whereby the shifting rod 55 is moved from the left to the right and the ball 52 moves out of engagement with the incline 51 and moves into engagement with the incline 50 thus rocking the lever 40 to disengage the same from the contacts 44, 45 and engage the contacts 42, 43 thus again reversing the motor. The carriage 20 now travels in the opposite direction, that is, from the left to the right, and the above described operation is repeated as long as the motor 30 is running.

In order to stop and start the motor 30 use is made of a stopping and starting switch 60 (see Fig. 6) arranged in one of the line wires of the motor, the switch having a three-arm lever 61 of which one arm is adapted to engage and disengage insulated contacts 62 arranged in the line wire to close the switch or open the same. The other arms of the lever 61 are connected with push buttons 63, 64 mounted to slide in a plate 65 arranged on the instrument board 66 of the vehicle so that the push buttons 63 and 64 are within convenient reach of the driver or operator to start or stop the motor 30 on the operator pressing the corresponding button.

The pinion 35 is located near the left hand end of the casing 26, and in order to properly balance the carriage to insure easy running thereof use is made of an idler pin-

ion 70 in mesh with the rack 36 and mounted on a shaft 71 journaled in the casing 26 near the right hand end thereof, as plainly shown in Fig. 4.

In order to insure proper contact of the wipers 21 and 22 with the corresponding surfaces of the glass plate 10, use is made of springs 80 and 81 attached to the carriage 20 and provided at their lower ends with set screws 82, 83 bearing against the outer faces of the wipers 21 and 22 to press the same with the desired force in engagement with the outer and inner surfaces of the glass plate 10. The wipers 21 and 22 may be of any approved construction, preferably of the squeegee type having rubber wiping members (see Fig. 3), the free ends of which bear tightly against the faces of the glass plate 10. Opposite sides of the wipers 21 and 22 are pressed on by spring arms 85, 86 to reinforce the wipers against the strain incident to their wiping action when moved across the surfaces of the glass plate 10.

Normally the cleaning device is inactive with the stopping and starting switch 60 in open position and with the cleaning device in any position of rest along its range of travel. When it is desired to use the cleaning device it is only necessary for the operator to push the button 63 to close the starting and stopping switch to start the motor 30. When this takes place the pinion 35 is rotated and as it is in mesh with the rack 36 a traveling motion is given to the carriage 20 either to the right or to the left according to the position of the reversing switch rod 55 and the switch lever 40. When the carriage nears the end of its travel in either direction the switch rod 55 engages the corresponding spring arm 58 or 59 and is thereby shifted, and the reversing switch now reverses the motor 30 and the carriage 20 travels in an opposite direction. The carriage 20 travels alternately in opposite directions as long as the motor 30 is running and in doing so the wiping elements 21 and 22 wipe and clean both surfaces of the glass plate 10 of all extraneous matter. After this has been done, the operator presses the button 64 and thus opens the stopping and starting switch and the supply of electric energy to the motor now ceases, the motor stops and the carriage comes to a standstill. Usually the operator presses the button 64 at the time the carriage is in position near one end of the wind shield so that the cleaning device does not obstruct the vision of the operator.

It is understood that the source of electrical energy for the electric motor is derived from the storage battery now generally used on automobiles and similar vehicles, but I do not limit myself to such a source of electrical energy as in many applications of the cleaning device other sources of power will

have to be used. It is further understood that although the cleaning device is shown applied to the wind shield of an automobile I do not restrict myself to such use as the cleaning device may be applied to various articles, the surfaces of which require to be kept clean of rain, sleet, snow, dust and other extraneous matter.

The cleaning device shown and described is very simple and durable in construction, can be readily applied to the article to be cleaned without materially altering the construction thereof, and so applied that the cleaning device forms a permanent fixture of the article.

It will be noticed that the cleaning device attached to a wind shield or other article does not interfere with the manufacture thereof for opening, closing or other purposes.

The line wires for the motor 30 are formed into an insulated flexible cable which readily makes forward and backward travel with the carriage.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A cleaning device adapted to be attached to a wind shield or other article to be cleaned, comprising a carriage having a fixed range of travel on the article, wiping means carried by the said carriage and engaging the surface to be cleaned, and a motor mounted on the carriage and imparting a traveling motion thereto.

2. A cleaning device adapted to be attached to a wind shield or other articles to be cleaned, comprising a carriage mounted to travel on the article to be cleaned, wiping means moving with the said carriage and engaging the surface to be cleaned, a reversible motor mounted on the said carriage and moving bodily with the same, propelling means driven by the motor and imparting a traveling motion to the said carriage, and reversing means for the said motor and arranged in the path of the carriage to reverse the motor and to cause the carriage to travel alternately in opposite directions.

3. A cleaning device adapted to be attached to a wind shield or other article to be cleaned, comprising a track adapted to be fixed on the article adjacent the surface to be cleaned, a carriage mounted to travel on the said track, wiping means attached to the carriage and engaging the said surface to be cleaned, a power driven motor mounted on the said carriage and moving with the same, and propelling means driven from the motor to impart a traveling motion to the carriage.

4. A cleaning device adapted to be at-

tached to a wind shield or other article to be cleaned, comprising a track adapted to be fixed on the article adjacent the surface to be cleaned, a carriage mounted to travel on the said track, wiping means attached to the carriage and engaging the said surface to be cleaned, a power driven motor mounted on the said carriage and moving with the same, a rack fixed on the said article, and a pinion mounted on the carriage and in mesh with the said rack, the pinion being driven from the said motor.

5. A cleaning device adapted to be attached to a wind shield or other article to be cleaned, comprising a track adapted to be fixed on the article adjacent the surface to be cleaned, a carriage mounted to travel on the said track, wiping means attached to the carriage and engaging the said surface to be cleaned, a power driven motor mounted on the said carriage and moving with the same, propelling means driven from the motor to impart a traveling motion to the carriage, and a reversing mechanism for the said motor and having members in the path of the carriage at the ends of the track to reverse the motor on the carriage when nearing the end of its travel in either direction.

6. A cleaning device adapted to be attached to a wind shield or other article to be cleaned, comprising a track adapted to be fixed on the article adjacent the surface to be cleaned, a carriage mounted to travel on the said track, wiping means attached to the carriage and engaging the said surface to be cleaned, a power driven motor mounted on the said carriage and moving with the same, a reversing mechanism for the said motor and having members in the path of the carriage at the ends of the track to reverse the motor on the carriage when nearing the end of its travel in either direction, a rack fixed on the article, and a pinion mounted on the carriage and in mesh with the said rack, the pinion being driven by the said motor.

7. A cleaning device adapted to be attached to a wind shield or other article to be cleaned, comprising a carriage mounted to travel alternately in opposite directions on one edge of the article to be cleaned, wiping means moving with the said carriage and engaging the surface to be cleaned, a rack adapted to be fixed to the article at the said edge, a pinion in mesh with the said rack and mounted on the said carriage, a motor mounted on the said carriage and driving the said pinion, and means to automatically reverse the said motor on the carriage when nearing the end of its travel in either direction.

CHARLOTTE A. BRIDGWOOD.