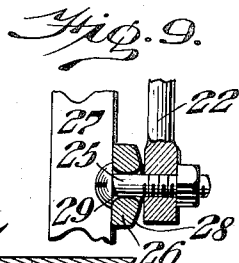
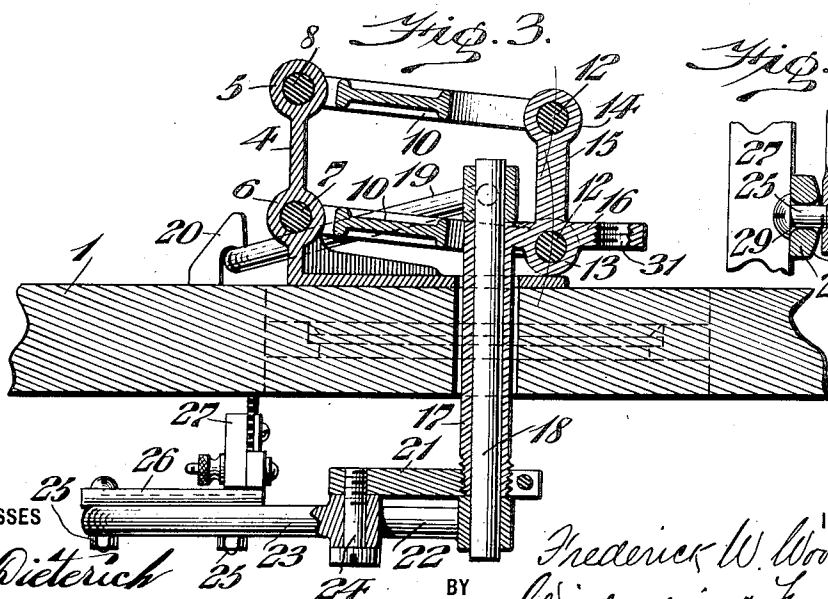
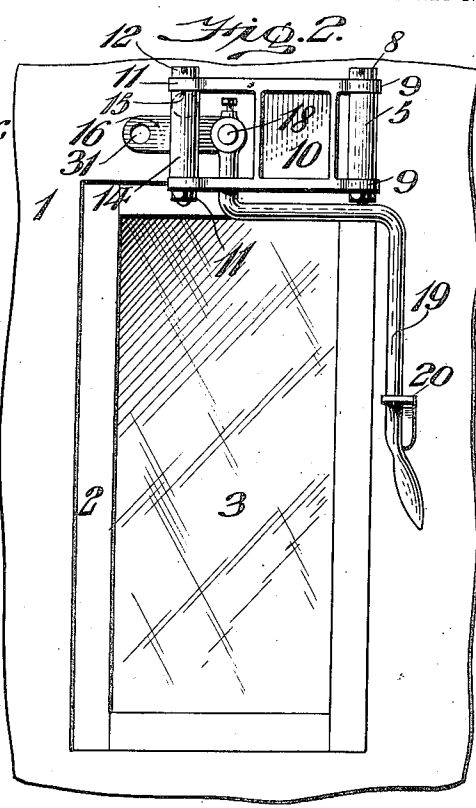
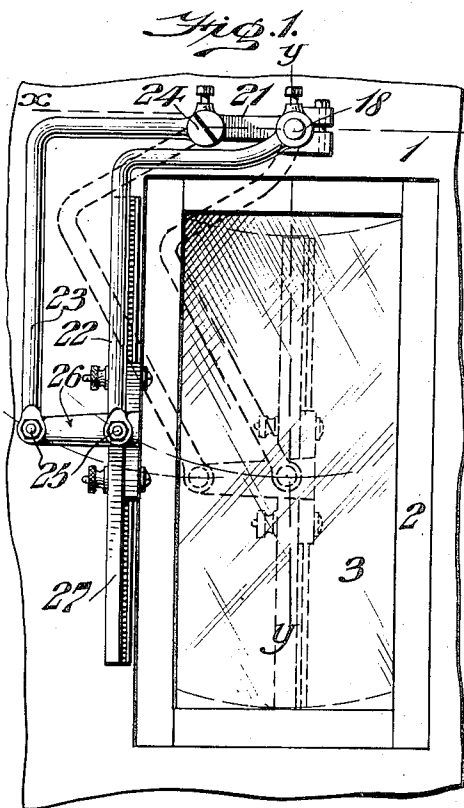


F. W. WOODHULL.
WINDOW CLEANING DEVICE.
APPLICATION FILED JULY 19, 1911.

1,018,148.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.



WITNESSES

H. E. Dieterich
L. Douville.

BY

Frederick W. Woodhull,
Wiederheim & Sanborn

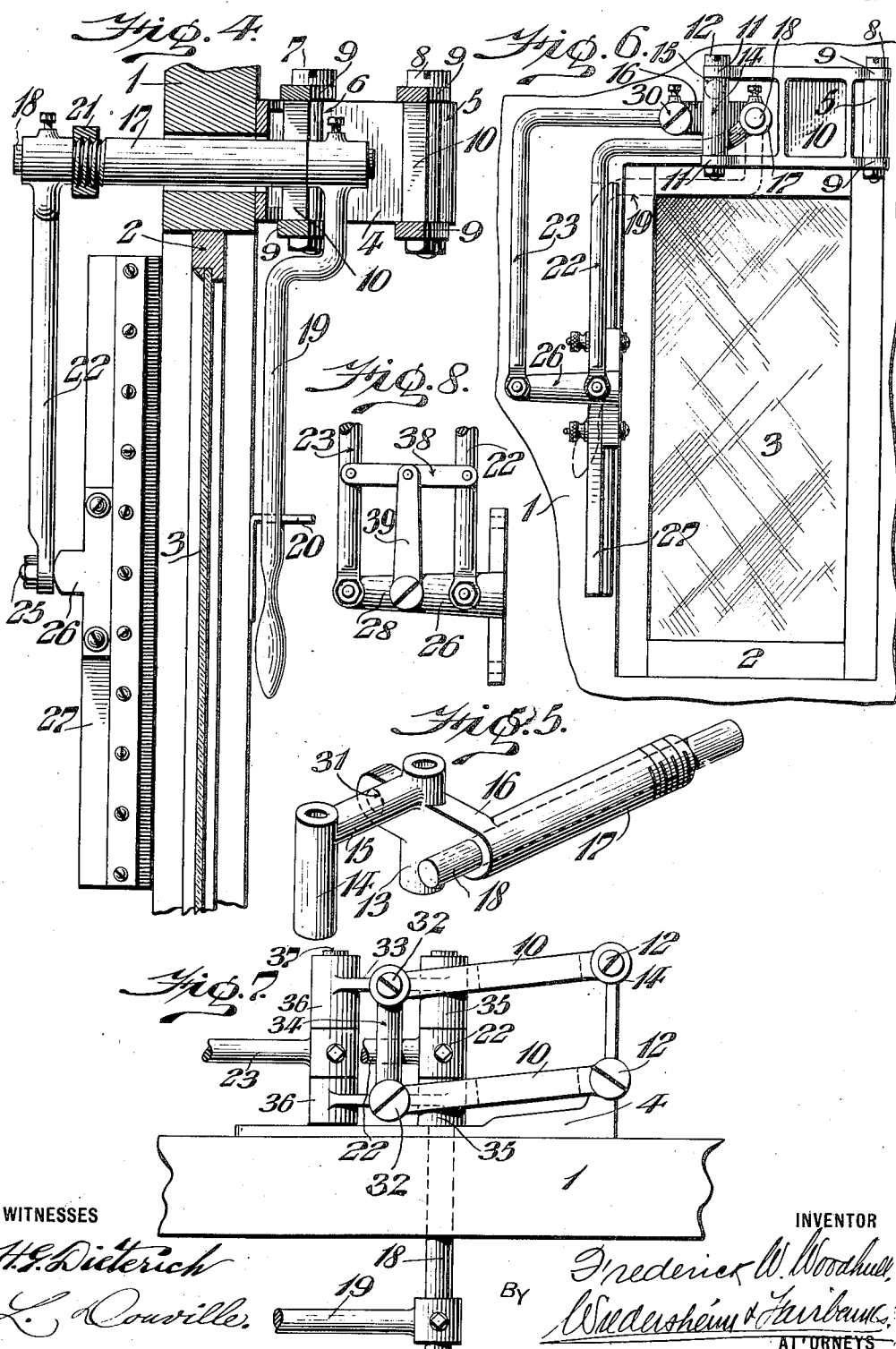
ATTORNEYS

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WITNESSES

H. E. Richter
L. Cowille

INVENTOR

By *Frederick W. Woodhull*
Wadsworth & Fairbank
ATTORNEYS

UNITED STATES PATENT OFFICE.

FREDERICK W. WOODHULL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO LUCY H. STETSON, OF PHILADELPHIA, PENNSYLVANIA, AND ONE-THIRD TO WILLIAM H. CARSON, OF MOUNT EPHRAIM, NEW JERSEY.

WINDOW-CLEANING DEVICE.

1,018,148.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed July 19, 1911. Serial No. 639,275.

To all whom it may concern:

Be it known that I, FREDERICK W. WOODHULL, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Window-Cleaning Device, of which the following is a specification.

My invention consists of an improved device for wiping the windows of locomotive cabs, street car vestibules, automobile windshields or similar windows from within and without the necessity of opening the window or getting out of the vehicle.

It further consists of improved means for moving the wiping-bar toward and away from the glass pane.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a front elevation of a window and its frame provided with my improved window cleaning device, seen from the outside. Fig. 2 represents a similar view from the inside of the window. Fig. 3 represents a horizontal section on the line $x-x$ in Fig. 1. Fig. 4 represents a vertical section on the line $y-y$ in Fig. 1. Fig. 5 represents a perspective detail view of a part of the hanger. Fig. 6 represents an elevation of a window and its frame illustrating a different arrangement of the hanger. Fig. 7 represents a top view of another form of my device. Fig. 8 represents a detail view of a connection for obtaining parallel movement for the arms supporting and actuating the wiper-bar and for providing yielding support for the same. Fig. 9 represents a sectional detail view of the pivot connection for an arm and the bracket on the wiper-bar.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings; the reference numeral 1 indicates the window frame, in which the sash 2, of the window-pane, 3, is mounted. A bracket, 4, is secured to the window-frame or other support, at a suitable point with respect to the window-pane, and is formed with two vertical sleeves, 5 and 6, in its projecting portion. Bolts, 7 and 8, pass through said sleeves, and the ends, 9, of the links, 10, are pivoted upon the ends of said bolts. The opposite ends, 11, of said links are pivoted upon the ends of bolts, 12, passing through sleeves, 13 and 14, in a bracket, 15, projecting from a bar 16, upon the end of a horizontal sleeve, 17. A rock-shaft, 18, is journaled in said sleeve and has a hand-lever, 19, secured to one end, which lever may be engaged and held away to one side of the window by a hooked catch, 20. The horizontal sleeve 17 passes through the window-frame or other support, and has on its end a supporting arm 21, secured to it. An arm 22, is secured to the end of the rock-shaft, and a second arm 23 is pivoted upon a bolt or stud 24, projecting from the end of the supporting arm 21. The opposite ends of said arms are pivotally connected with the bracket 26, as here shown by studs 25, said bracket carrying a wiper-bar 27 which is thus held in its proper position in relation to a window-pane when it is moved over the face thereof.

The method of operating this device is substantially the same as that of the device for which application No. 610,218, was filed by me on the 23rd day of February 1911. When it is desired to wipe rain, snow, sleet, or whatever may be deposited upon the window-pane from the same, the hand-lever is released from its catch, and after rocking it and the rock-shaft to bring the wiper-bar clear of the window-frame and sash, the hand-lever is pulled toward the operator, swinging the links and drawing the wiper-bar against the window-pane, whereupon the hand-lever is swung transversely, causing the wiper-bar to move over the face of the pane, thus cleaning the same. The outer side of the bracket upon the wiper-bar is rounded as at 28, and the holes, 29, through which the pivot-bolts for the arms pass, are

rounded or flared toward both sides, so that a certain amount of play is provided for the wiper-bar, as illustrated in Fig. 9.

In the form of the device illustrated in Fig. 6, the arms and wiper-bar are on the same side of the window as the links, one arm being secured upon the rock-shaft and the other arm being pivoted upon a bolt, 30, secured in a screw threaded hole, 31, in the end of the bar 16 upon the horizontal bearing-sleeve 17. The hand-lever is secured upon the opposite end of the rock-shaft. The operation of the device is the same as that of the first-described device.

In the form of the device illustrated in Fig. 7, the movable ends of the links are pivoted upon bolts 32, passing through webs, 33, connected by a bar, 34, and having transverse bearing-sleeves, 35 and 36 at their ends. The bearing sleeves 35 are fitted upon the rock-shaft and the arm 22 is secured upon said shaft between said sleeves. A short shaft 37 rocks in the sleeves 36, and the arm 23 is secured upon said shaft. In this construction the rock shaft 18, alone, passes through the window frame or other support and has the hand lever 19 secured thereto as before.

To provide resilient support for the bracket and wiper bar in the slight rocking motion permitted the same by their construction and connection illustrated in Fig. 9, the device illustrated in Fig. 8 of the drawings is employed. In said device, a link, 38, is pivoted at its ends to the two supporting arms 22 and 23, a distance from the pivoted ends of the same and a flat spring, 39, is pivotally connected to the bracket and to said link to have swinging movement parallel to the arms, but so as to admit of, but oppose, rocking motion of the bracket. When the wiper-bar is brought against the window-pane, and the latter is not in a plane parallel to the plane of movement of the arms, the rounded surface of the bracket, the flared bolt-holes in the same and the yielding of spring 39 will permit the wiper to adjust itself to bear with its entire edge against such pane. When the wiper bar is removed from contact with the glass, the spring will cause it to resume its normal position parallel with the window frame. The spring will also prevent rattling at the joints between the bracket and the ends of the arms, when the wiper-bar swings on the bolts, thus relieving the latter from sudden shock.

The wiper-bar will be kept out of contact with the window-pane and will not obstruct view through the same when not in use, and may be drawn into contact with the pane and exert greater or less pressure upon the same by drawing more or less upon the hand-lever in moving the same transversely.

The device is applicable to windows of

locomotive cabs, and of the vestibules of street-cars, to ordinary car-windows, to windows of carriages, to wind-shields of automobiles, or to any windows or similar transparent contrivance from which it is desired to wipe moisture, or any other obstruction therefrom. The device is operated from within, without manipulation of the window.

It will be noticed that the pivoted links provide a substantially rectilinear movement of the rock-shaft and of the arms and wiper-bar, so that the latter will be brought squarely against the window-pane to bear equally against the same at all points. In the several forms disclosed, the same parallel movement is provided by means of the parallel links.

Attention is directed to the fact that only one small hole or opening, in the support, is necessary, through which the complete operation and control of the wiper bar is accomplished.

Any suitable means for connecting or supporting the device with respect to a wind shield in an automobile may be employed.

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

1. In a device of the character stated, a wiper-bar, a rock-shaft adapted to be supported adjacent the window, means for rocking said shaft, an arm directly secured upon said shaft and movably connected to said wiper-bar, and a support pivotally mounted adjacent the window in which said rock-shaft is journaled and the free end of which support is adapted to be swung to bring the wiper-bar against or away from the window-pane.

2. In a device of the character stated, a wiper-bar, a supporting link device adapted to be mounted adjacent the window to swing in a plane transverse to the plane of the window, a bearing-sleeve carried by said device to swing with the same, a rock shaft journaled in said sleeve, means for rocking said shaft and an arm secured to the rock-shaft and connected to the wiper-bar.

3. In a device of the character stated, a wiper-bar, a bracket adapted to be supported adjacent a window, parallel links pivoted to said bracket, a horizontal bearing sleeve pivotally connected to the moving ends of said links, a rock-shaft in said bearing-sleeve, means for rocking said shaft, and an arm secured to the rock-shaft and connected to said bar.

4. In a device of the character stated, a bracket adapted to be secured adjacent a window, links pivoted to said bracket, a bearing sleeve pivotally connected to the moving ends of said links, a rock-shaft in said bearing sleeve, a wiper-bar, a bracket upon said bar, and arms pivotally connected to said bracket and one of said arms secured

to the rock-shaft and the other arm pivoted adjacent the window.

5 In a device of the character stated, a bracket adapted to be secured adjacent a window and formed with two vertical sleeves, bolts in said sleeves, links having their ends pivoted on said bolts, a bearing-sleeve provided with a bracket formed with vertical sleeves, bolts in said sleeves and 10 having the other ends of said links pivoted upon them, a rock-shaft in said sleeve, a hand-lever secured to said rock-shaft, a supporting arm secured on the opposite end of said sleeve, a wiper-bar, a bracket upon said 15 wiper-bar, an arm secured on said rock-shaft and pivotally connected to said bracket, and an arm pivotally connected to the wiper-bar bracket and to the supporting arm on the sleeve.

20 6. In a device of the character stated, a wiper-bar, a rock-shaft adapted to be supported adjacent a window, an arm connected with said rock-shaft and with the wiper-bar, a swinging support for said rock-shaft 25 mounted to be moved in a direction axial to the shaft, and a single means for rotating said rock-shaft and for axially moving the

latter and its support, whereby the wiper-bar is moved against or away from the window-pane and over the face thereof. 30

7. In a device of the character stated, a bracket adapted to be secured adjacent a window, links pivoted to said bracket, a bearing sleeve pivotally connected to the moving ends of said links, a rock-shaft in 35 said bearing sleeve, a wiper-bar, a bracket upon said bar, arms pivotally connected to said bracket to admit of the latter having swinging and rocking motion upon the ends of said arms and one of said arms secured to the rock-shaft and the other arm pivoted 40 adjacent the window, and means connected between the arms and the bracket to hold the wiper-bar in a vertical position normally, but permitting it to yield sufficiently to come 45 in full contact with the window-pane, should the plane of the latter not be parallel with the window frame, to which the wiping-bar is set.

FREDERICK W. WOODHULL.

Witnesses:

C. D. McVAY,
F. A. NEWTON.