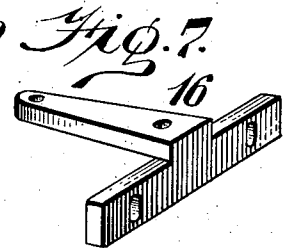
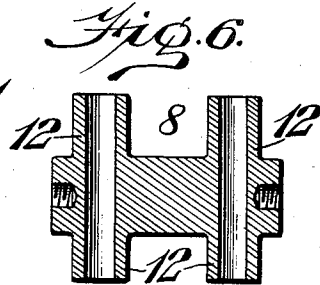
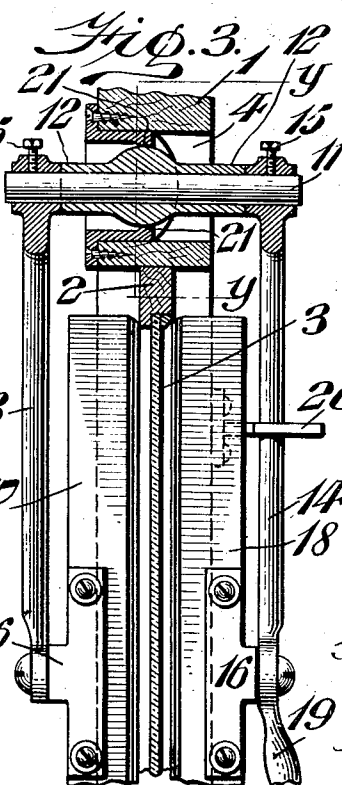
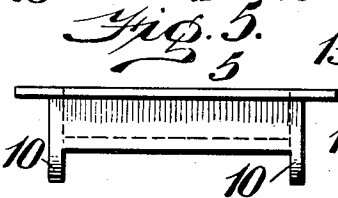
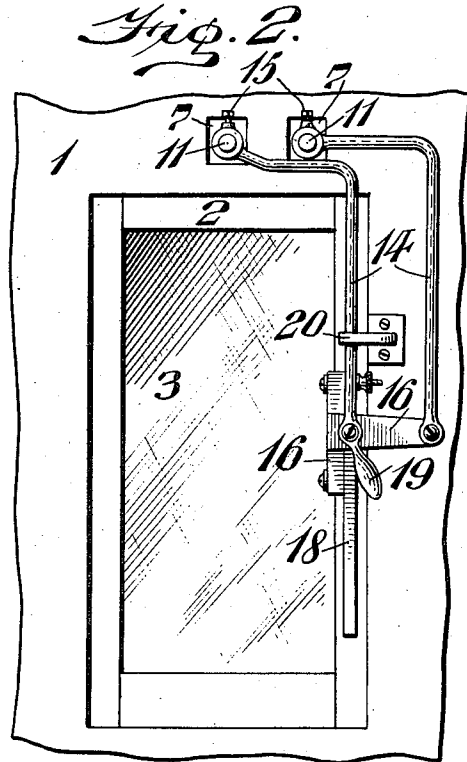
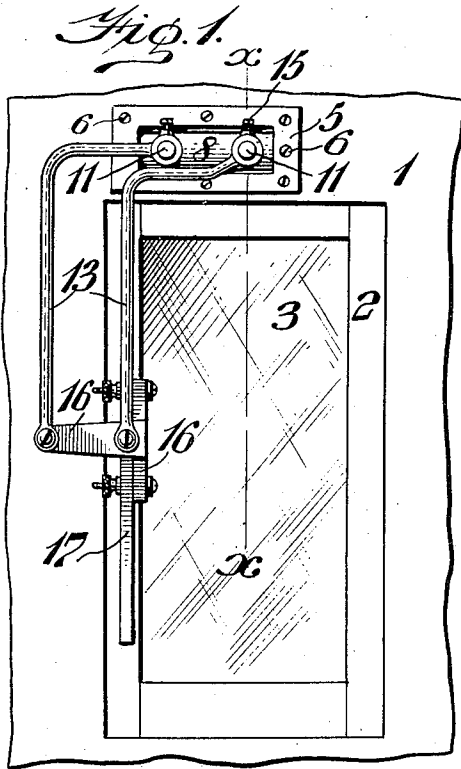


F. W. WOODHULL.
WINDOW CLEANING DEVICE.
APPLICATION FILED FEB. 23, 1911.

1,018,147.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.



WITNESSES

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L. Douville.

INVENTOR

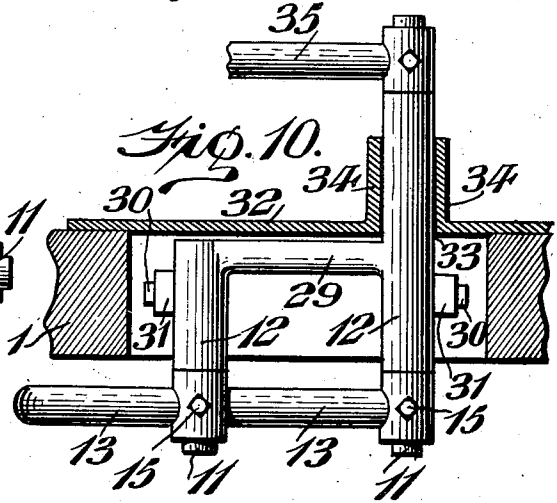
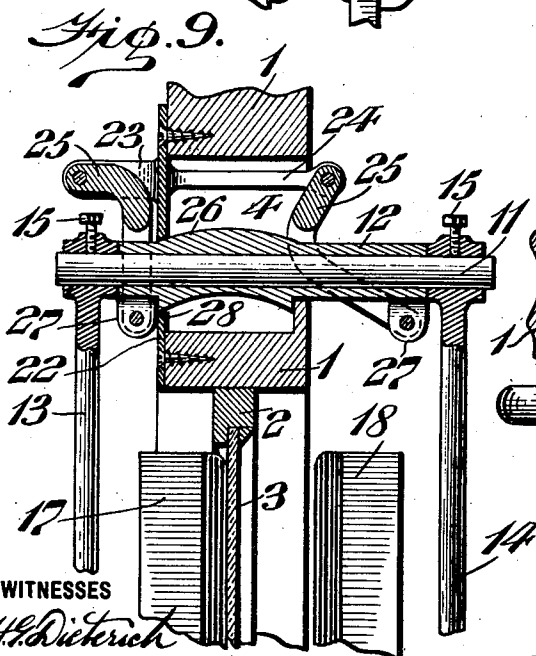
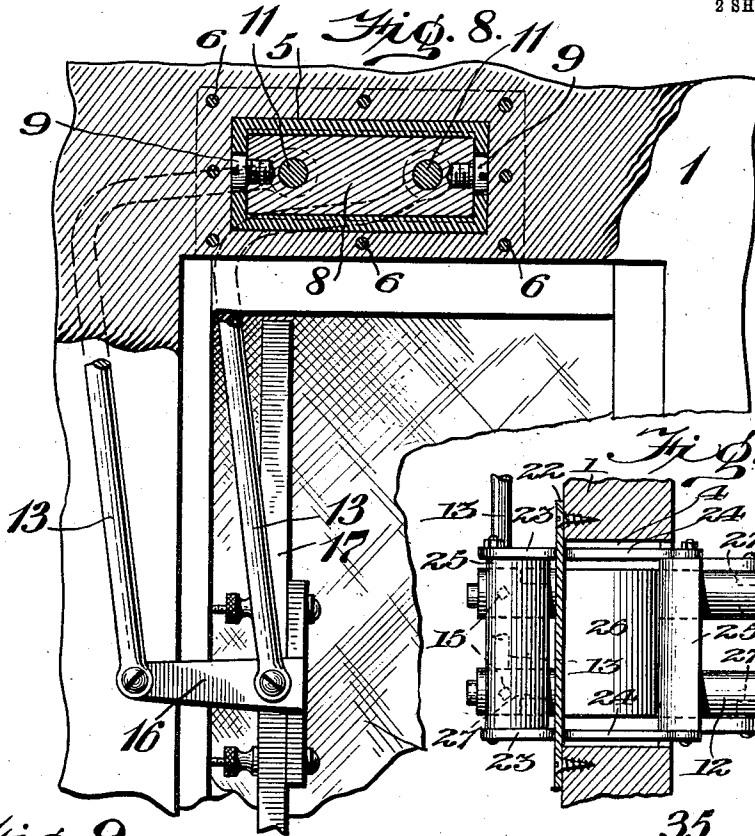
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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WINDOW-CLEANING DEVICE.

1,018,147.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed February 23, 1911. Serial No. 610,218.

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 particularly intended for clearing the windows of the vestibule of a street car or of a locomotive engineer's cab from snow, rain, sleet or dew without the necessity of opening the window or of using a cloth.

It further consists of improved means for clearing both sides of such window.

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 will be 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 an elevation of the outside of a window in a street car vestibule provided with my improved clearing device. Fig. 2 represents an elevation of the inside of such window. Fig. 3 represents a section on the line $x-x$ in Fig. 1. Fig. 4 represents a detail face view of the box or casing wherein the device is suspended. Fig. 5 represents a side view of such casing. Fig. 6 represents a sectional detail view of the frame or hanger upon which the device is suspended. Fig. 7 represents a perspective view of a bracket for one of the wiping bars. Fig. 8 represents a section on the line $y-y$ in Fig. 3. Fig. 9 represents a vertical section of a portion of a window and window sash, illustrating another embodiment of my invention. Fig. 10 represents a horizontal detail section illustrating still another embodiment of the invention. Fig. 11 represents a horizontal section of the form of the device illustrated in Fig. 9.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, the window frame is indicated by the numeral 1, the window-sash by the numeral 2, and the pane by the numeral 3. Above or in the lintel of the window frame is formed a recess 4, and a rectangular flanged frame or casing 5, is secured in the same by means of screws 6, passing through its flange and into the lintel. The rear of the recess opens through two slots, 7, in the lintel. An H-shaped hanger 8 is pivoted to rock in the flanged casing, screws 9, inserted in the ends of its cross-bar being journaled in ears 10 on the ends of the casing. Shafts 11 are journaled to rock in bearings 12 in the two parallel limbs of the hanger, and have rectangularly bent arms, 13 and 14 secured to their ends by set-screws 15. The lower ends of said arms are pivoted to brackets 16, secured at right-angles to wiping bars 17 and 18, either of which may be brought to bear against a face of the window pane and be moved across the face of the same. One of the arms 14 upon the inner side of the window has a handle, 19, for manipulating it. A catch, 20, is secured upon the window frame and one of the inner arms 14 may engage the same and be held in inoperative position by the same.

In practice, the handle is gripped and the entire device is rocked upon the pivoted hanger to bring whichever of the wiping bars it is desired to use into contact with either face of the window pane, whereupon a transverse movement of the handle and arms will sweep the wiping bar across the pane, clearing it of snow, rain, sleet, ice or mist, or whatever has accumulated upon the same. Both sides of the pane may be cleared by rocking the device to bring either wiper in turn into contact with a face of the window pane.

This device is of particular utility for clearing the windows in the vestibule of a street car or in a locomotive cab, although, of course, it may be employed in connection with any window, such as the glass wind shield or front for automobiles or other vehicles, and by its use, the window of such vestibule or cab may be cleared on both sides without the necessity of opening the window or getting on the outside of the same, and without the use of a cloth or other manually handled article or implement.

By supporting each wiping bar from the two arms pivotally connected to the hanger and bracket at the same distance from each other, the wiping bar has a parallel movement and sweeps or wipes clear across the face of the window pane.

The cross-bar of the H-shaped hanger is of such diameter that its cylindrical sides will bear against the upper and lower sides of the casing in which it is pivoted, and bearings, 21, are formed upon said sides, so that the entire opening through the window frame is closed, the ends of the cross bar abutting snugly against the ends of the casing.

In Fig. 9 of the drawings is illustrated a different form of hanger from that illustrated in Figs. 1 to 7. A plate, 22, is secured over the opening or recess 4 in the lintel of the window frame. Brackets 23 and 24, project in opposite directions from the faces of the plate, and L-shaped links, 25, have the ends of their short arms pivoted to such brackets. A hanger 26, having bearings 12 for the rock-shafts 11, has ears, 27, to which the lower ends of the links are pivotally connected, and the body of said hanger is curved on the arc of a circle and fits to slide in an opening, 28, in the plate. The arms 13 and 14 and the wiping bars 17 and 18 are of the same construction and have the same parallel movement as those already described. As the hanger is moved inward or outward, swinging upon the links, to clean the outer or the inner face of the window pane, the curve of the hanger admits of the latter moving through the opening in the plate and practically filling the same, thereby excluding draft and rain or snow.

The form illustrated in Fig. 10 of the drawings is intended to be employed with an outer wiping bar, only, and the hanger, 29, has a cross-bar and two bearings 12 for the rock-shafts 11. The hanger has pintles or trunnions, 30 pivoted in ears, 31, in the recess through the lintel of the window-frame, the inner side of which is closed by a plate, 32, having a slot, 33, on opposite side of which are guide-flanges 34, between which the inner end of one of the bearings 12 may be guided. As only one set of parallel arms is used, only the one rock-shaft is carried through the window-frame, and is provided with a handle, 35, for rocking the device and for swinging the arms and wiping bar.

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 wiping bar, and two arms pivotally connected to said bar and adapted to be pivotally connected adjacent the window to have parallel movement.

2. In a device of the character stated, a wiping bar, a bracket secured at an angle to the same, and two arms adapted to be pivotally connected adjacent a window and pivoted to the bracket.

3. In a device of the character stated, a hanger adapted to be movably mounted adjacent a window, two pairs of arms pivotally connected to said hanger one pair on each side of the window, and two wiping bars, each pivotally connected to a pair of arms.

4. In a device of the character stated, a hanger adapted to be movably mounted adjacent a window to extend entirely through its support and formed with a bearing through it, a rock-shaft in such bearing, arms secured to the ends of said shaft, and wiping bars pivotally connected to such arms to be moved over the window pane, and such movable hanger admitting of either wiping bar being brought into contact with a face of the pane.

5. In a device of the character stated, a wiping bar, an arm having said bar secured to its free end, and means for pivotally supporting the inner end of said arm adjacent a window to allow the arm and bar to swing toward and from a window pane and to allow the arm and wiping bar to be moved over the same.

6. In a device of the character stated, parallel arms adapted to be pivotally supported upon a window frame, and a wiping bar pivotally connected to such arms to have parallel movement across a window pane.

7. In a device of the character stated, a hanger adapted to be supported in a window frame, parallel arms pivoted at their ends to such hanger, and a wiping bar pivotally connected to the ends of such arms to have parallel movement across a window pane.

8. In a device of the character stated, a hanger adapted to be movably supported in and through a window-frame, rock-shafts journaled through such hanger, parallel arms secured at their ends to opposite ends of said rock-shafts, and wiping bars pivotally supported upon said parallel arms to have parallel movement across a window pane the movability of the hanger admitting of either wiping bar being brought into contact with a face of the window pane.

9. In a device of the character stated, a hanger adapted to be supported to rock in and through a window frame, two rock-shafts journaled through such hanger, two pairs of parallel arms secured at their ends to opposite ends of such rock-shafts, and two wiping bars having brackets projecting laterally at right angles to the same, said brackets having the ends of the parallel arms pivotally connected to the same.

10. In a device of the character stated, a

rectangular casing adapted to be secured in and through a window frame, an H-shaped hanger having a cylindrical cross-bar and bearings in its parallel limbs, said cross-bar having a bearing in the sides of the casing and the ends of the cross-bar abutting against the ends of the casing, screws journaled in the ends of the casing and secured in the ends of the cross bar of the hanger, rock-shafts in the bearings of the hanger, parallel arms secured to the opposite ends of said rock-shafts, and wiping bars pivotally supported from the ends of said arms.

11. In a device of the character stated, a hanger adapted to be supported in the lintel of a window frame a pair of rectangularly bent parallel arms pivoted at the ends of their short upper limbs to said hanger, and a wiping-bar having a bracket projecting at a right angle, the lower ends of said arms being pivotally connected to said bracket.

12. In a device of the character stated, a hanger adapted to be movably mounted ad-

jacent a window frame and formed with a bearing adapted to extend through said frame, a rock shaft in said bearing, arms secured to said shaft on opposite sides of said frame and a wiping bar pivotally connected to one of said arms to be moved over the window pane and such movable hanger admitting of said wiping bar being brought into contact with the face of the pane or moved to a position at one side of said pane.

13. In a device of the character stated, a wiping bar, an arm having said bar secured to its free end, a rock shaft having a handle for rocking it and having the arm secured to it, and a hanger having a bearing for said shaft and movably supported adjacent a window to admit of the arm and wiping bar being moved toward and from the window pane.

FREDERICK W. WOODHULL.

Witnesses:

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