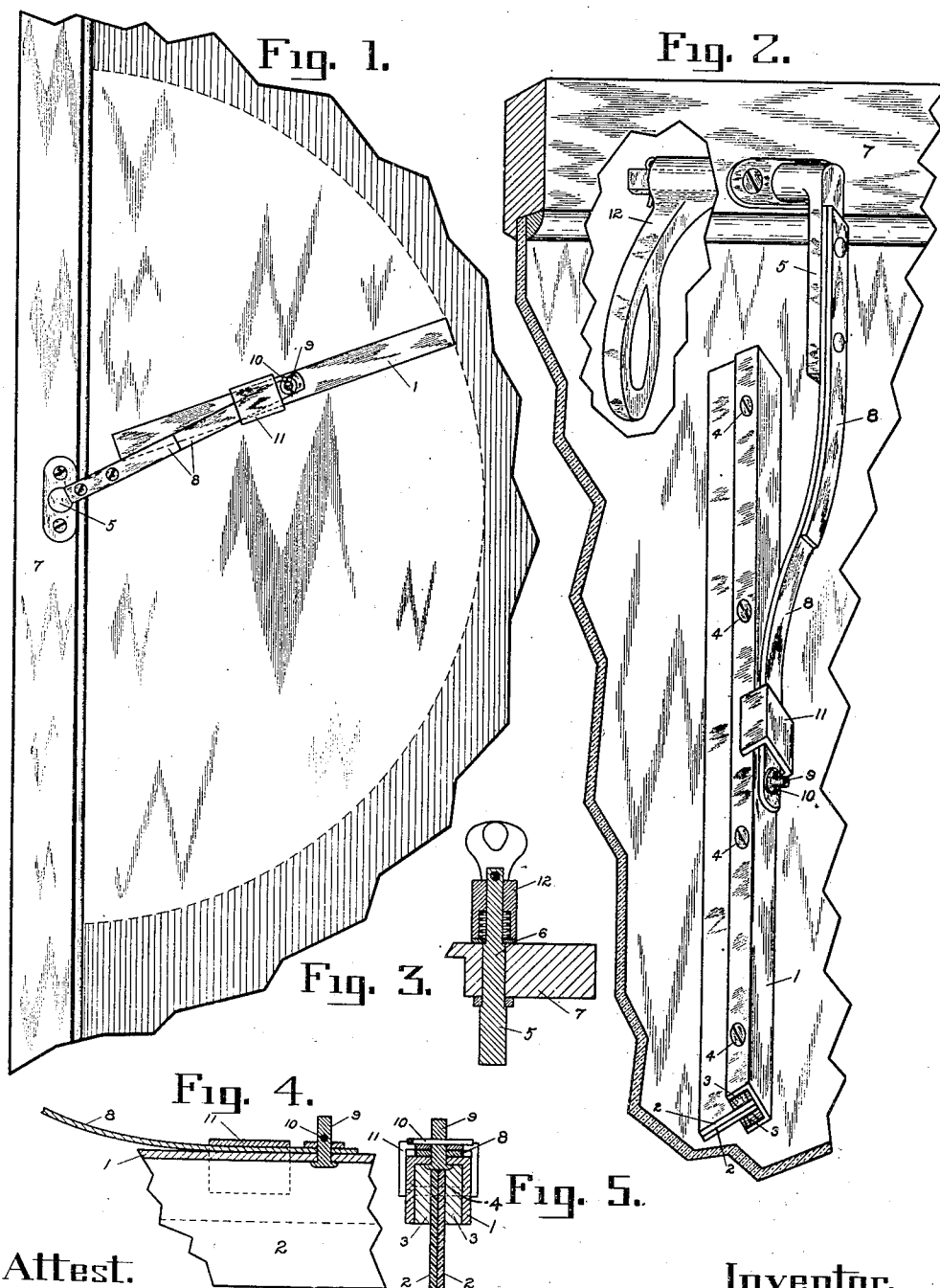


J. S. McWHIRTER.
WINDOW CLEANER.
APPLICATION FILED NOV. 26, 1915.

1,246,829.

Patented Nov. 13, 1917.



Attest.

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WINDOW-CLEANER.

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Specification of Letters Patent.

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Application filed November 26, 1915. Serial No. 63,424.

To all whom it may concern:

Be it known that I, JOHN S. McWHIRTER, a citizen of the United States, residing at Manhattan Beach, in the county of Kings and State of New York, have invented certain new and useful Improvements in Window-Cleaners, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to window cleaners, and more particularly to that type of window cleaner which is employed for removing rain, snow and the like from the window of a street car vestibule to permit the motorman to have a clear view of the street ahead of the car. The object of the invention is to provide a device of this kind which will be simple and inexpensive in its construction; which can be readily applied to the window with but little cutting thereof, and which will be of such a character that it cannot be easily broken and will not readily become disarranged or be rendered inoperative, either by abusive use or by exposure to the weather. To this end, it is a further object of the invention to mount the wiper, or squeegee, upon the end of an arm which is pivotally mounted on a suitable portion of the window structure, and which may be actuated from the inside of the window to cause the squeegee to travel over the pane of glass which is to be cleaned, and to so construct and arrange these parts that the squeegee will be held firmly in engagement with the glass throughout its length, thus doing away with the necessity of providing auxiliary springs, joints, etc. It is also an object of the invention to provide an improved form of squeegee in which the strips of rubber, or the like, will be held firmly in their extended positions and prevented from buckling, and in which such strips can be readily removed and replaced. Other objects and advantages of the invention will appear as the same is described in detail.

In the accompanying drawings, Figure 1 is a front elevation of a portion of a window sash and its glass, showing my invention applied thereto; Fig. 2 is a perspective view of the same on a larger scale; Fig. 3 is a sectional view taken lengthwise of the supporting shaft; Fig. 4 is an enlarged sectional view taken longitudinally of the squeegee through the fastening devices which connect

it to the resilient arm; and Fig. 5 is an enlarged transverse section taken transversely of the squeegee and through the pin which connects it to the resilient arm.

In these drawings I have illustrated one embodiment of my invention and have shown the same as applied to the sash of a street car window, but it will be understood that the invention may be applied, without material modification, to windows of various kinds, and that it is not necessarily mounted upon the sash but may be mounted upon any suitable part of the window structure. In carrying out my invention as here illustrated, I have mounted a resilient arm upon a stud, or short shaft, which is journaled in the window sash and is provided at its inner end with means for actuating the same. The free end of this arm is arranged to be moved over a portion of the glass in the sash and has secured thereto a squeegee which it holds firmly in engagement with the glass. These parts may take various forms, but the construction here illustrated has proved highly efficient.

In this particular construction of the device the wiper, or squeegee, comprises a channel 1, of brass or the like, between the flanges of which are secured one or more strips of flexible material, such as rubber, as shown at 2. In the present instance there are two strips of rubber. In order to hold the rubber strips in their extended positions and to prevent them from buckling, I prefer to secure the edges thereof between two pieces of wood 3, which constitute fillers and are adapted to fit snugly between the flanges of the channel 1. These fillers may be secured within the channel by means of screws 4, which extend through one flange of the channel, through both the filler strips and the rubber strips, and are screwed into the other flange of the channel, thus drawing the several parts together and clamping the edges of the rubber strips firmly in position, as shown in Fig. 5. These flexible strips 2 are of such a width that their outer edges project some distance beyond the edges of the flanges of the channel, but the exact width of the strips is immaterial and will be determined by the character and thickness of the material, and by other conditions entering into the construction and operation of the device. The arm which carries

the squeegee may be resilient throughout such portion of its length as is desirable, but I prefer that it should be resilient for the greater portion of its length and I have here shown the same as comprising two parts, one of which is rigid and the other of which is resilient. The rigid part of the arm is in the form of a casting or bracket 5 which is rigidly secured to, and, if desired, may be formed integral with, a stud or short shaft 6, here shown as journaled in the rail 7 of the sash. The body portion of the bracket extends transversely to the stud or shaft 6, and has rigidly secured thereto a resilient member which is preferably in the form of a leaf spring 8, and may comprise a number of leaves suitable to give it the desired resiliency. The free end of this leaf spring is secured to the squeegee at a point between the ends of the latter. This connection may be formed in various ways, but I prefer that here shown, in which the brass channel 1 is provided with a clip 11 extending above the back thereof, and forming a guideway through which the end portion of the resilient arm extends. A stud 9 is passed through the channel 1 from the inside thereof and extends through that portion of the resilient arm which projects beyond the clip 11, and is secured therein by a suitable fastening device, such as a cotter pin 10. As here shown, the end portion of the resilient arm is of less width than the channel and consequently the squeegee has a limited movement about the axis of the stud 9. This however, is not essential to the carrying out of the invention. The shaft 6 is provided on its inner end with a suitable actuating device 12, by means of which the shaft may be rocked about its axis and the squeegee caused to travel over the window pane. Because of the pivotal connection between the squeegee and the supporting spring, the squeegee may be operated approximately parallel with the sash rail on either side and it may be moved into parallel engagement with the sash rail on either side of the shaft 6.

It will be apparent that the construction is one of great simplicity and, at the same time, of great durability. The several parts of the mechanism have practically no relative movement, as it is not essential that the squeegee should have any pivotal movement relative to the resilient arm, consequently there are no movable joints exposed to the weather, to become corroded or clogged with ice and thus prevent the proper operation of the device. The device moves as a whole in the bearing of the shaft 6 in the window sash and this bearing is protected from the weather. The device is very inexpensive in construction and can be placed on the market at a cost so low that its application to the cars of a street railway

system will not be burdensome to the company. Further the device has a high degree of efficiency. The resilient arm serves to hold all parts of the squeegee in firm engagement with the glass during all parts of its movement over the glass and consequently the cleaning action is a thorough one. Moreover, the rubber strips of the squeegee can be very readily moved and renewed when worn thus reducing the upkeep cost to a minimum.

While I have shown and described one embodiment of my invention, I wish it to be understood that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a window cleaner, a squeegee having a body portion, a single clip secured to said body portion near the center thereof and having a part extending transversely thereto and spaced away therefrom, a resilient arm extending through said clip between said transverse portion thereof and the body portion of said squeegee and having its end secured to said body portion beyond said clip, a shaft rigidly secured to that end of said arm remote from said squeegee, and means for imparting rotatory movement to said shaft.

2. In a window cleaner, a squeegee having a body portion, a clip secured to said body portion and having a part extending transversely thereto and spaced away therefrom, a resilient arm extending through said clip and having that portion which lies within the clip of less width than the clip, means to pivotally connect the end of said arm with said body portion at a point beyond said clip, whereby said squeegee will have a limited pivotal movement relative to said arm, a shaft secured to that end of said arm remote from said squeegee, and means for imparting rotatory movement to said shaft.

3. In a window cleaner, a squeegee, comprising a metal channel, a clip secured to said channel and forming a guideway on the closed side thereof, a resilient arm having a portion extending through said guideway, said portion being of less width than the guideway and a pin extending through the wall of said channel and through that end of said arm which extends beyond said guideway to pivotally connect the arm to the channel, a pivotal support for said arm at that end thereof opposite said squeegee, and means to move said arm about said pivotal support.

4. In a window cleaner, a squeegee, comprising a metal channel and a substantially U shaped clip having its side members secured to the respective flanges of said chan-

nel and having its transverse portion spaced
away from the back wall of said channel,
a flat spring having a portion extending
through said clip, said portion being of less
5 width than said clip, a pin extending through
the wall of said channel and through that end
of said spring which extends beyond said
clip to pivotally connect the arm to the chan-

nel, a pivotal support for said arm at that
end thereof opposite said squeegee, and 10
means to move said arm about the axis of
said support.

In testimony whereof, I affix my signature
hereto.

JOHN S. McWHIRTER.