

UNITED STATES PATENT OFFICE.

ELLA A. STAUFFER, OF CHICAGO, ILLINOIS.

WINDOW-WASHER.

SPECIFICATION forming part of Letters Patent No. 531,754, dated January 1, 1895.

Application filed August 15, 1894. Serial No. 520,365. (No model.)

To all whom it may concern:

Be it known that I, ELLA A. STAUFFER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Window-Washers, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is an improvement upon an invention for the same purpose for which Letters Patent were granted to me August 19, 1890, No. 434,734.

In the drawings:—Figure 1 is a vertical section through the sill of a window casing to which my invention is attached, the parts constituting the invention being shown in side elevation except as to certain details which are shown in vertical section at planes indicated by the lines 1—1 on Fig. 2. Fig. 2 is a plan of the devices which are shown in Fig. 1, some parts being broken away to disclose others beneath them. Fig. 3 is a detail section at the line 3—3 on Fig. 1. Fig. 4 is an enlarged detail perspective of the parts constituting a two-movement joint which connects the scrubber to the operating arm, one piece of the socket-plate being removed. Fig. 5 is a section of said joint at the line 5—5 on Fig. 1.

A represents the sill of the window.

B is the bottom rail of the sash; B', the glass therein.

C is the foundation board of my machine.

C' C' are clamping jaws which extend through slots c' c' in the foundation board C, protruding downward below the latter to grasp the sill, and protruding upward to receive the clamping screw C², which passes freely through the upper end of the jaw C', which is inside the window, and is threaded and screwed through the jaw C', outside the window. At the other end, the screw has the crank handle C³, by which it is rotated to effect the clamping of the machine to the window frame or sill.

On the outer end of the foundation board C, there is mounted a post D, which is swiveled at its lower end in the socket D', which is secured rigidly to the plank C. The post D is thus adapted to turn about its own vertical axis, and for the purpose of turning it

and thereby adjusting the parts carried by it, it is provided with a handle D², which is rigidly secured to it at d², and thence bent down toward the plank C, and then inward toward the window in substantially horizontal direction, extending at this portion over the notched segment C³, which is secured rigidly to the plank C, the notches being adapted to afford lodgment for the arm D² and securing the post D in its angular adjustment in its socket. The arm D² is sufficiently elastic between its point of attachment to the post D and the point where it lodges in the notches of the segment, to permit it to be sprung up out of the latter for the purpose of shifting to a different position.

E is the scrubber or wiper which operates upon the window. It is connected to the inner end of its operating arm E' by a double-movement joint of a character sometimes termed a "universal joint," but which is not such in fact, because it does not permit rotation of the scrubber about the axis of the arm, but only permits hinge movement in two directions at right angles to each other; the pivot e', which connects the handle to the intermediate link E¹⁰ being horizontal, and the pivot e¹⁰ of the link E¹⁰ to the scrubber back being vertical. For convenience, and as a means of affording a very strong and secure joint at this latter pivot, I make the bracket E¹¹, which is fastened upon the back of the scrubber, and forms one member of the vertical joint in two pieces e¹¹ and E¹¹, divided at a vertical plane through the axis of the vertical pivot, and the joint is connected together by applying the pivot to one of the members, and afterward securing the other member in place embracing the pivot.

The arm E' extends through a suitable slot in the upright post D, and is pivoted thereto, being provided with a long slot e¹², through which the pivot pin E¹² passes, so that the arm has a considerable range of longitudinal adjustment of its pivot. To the rear end of the arm at an eye E³, I secure two spiral springs F F, one extending upward and the other downward, and both being attached to the post D at suitable eyes ff. These springs are of substantially equal length and strength, and tend both to elastically resist extension and thereby to protrude the arm forward,—

that is, toward the window,—and to hold the scrubber with considerable pressure against the window.

When the arm E' is horizontal, the two springs being equally extended, operate in an equal degree to produce the pressure of the scrubber upon the window. When the scrubber is operating at a point below the horizontal position, as shown in dotted line in Fig. 1, the lower spring is extended and exerts the greater pressure, and in like manner, when the scrubber is operating at a point above the horizontal position of the arm, the upper spring is more extended and exerts the greater pressure. In each case, it will be seen that the spring which pulls more nearly in the direction of the length of the arm, or more nearly directly toward the window, is the one whose pressure is chiefly instrumental in pressing the scrubber against the window, so that, practically, the pressure is kept uniform throughout all positions of the scrubber on the window.

G is a socket plate which is secured to the foundation board C, intermediate the clamping jaws C' C', and designed to be directly under the window when the device is mounted on the sill.

H H' is a two-part hinge, of which the part H has a stem or spindle *h*, which takes into a socket G' of the socket plate G, and of which the other member H' has a boss *h'*, into one of which there is secured a handle J, which extends inside the window, while into the other end of the boss there is secured a lever arm K, which extends outside the window. The said part H' and its two arms J and K constitute a lever which at its rear end has pivotally attached to it the link L, which extends to the scrubber arm E' and is pivoted thereto at *l*, intermediate the pivot of the scrubber and its pivot to the post D.

It will be understood that the parts thus far described are adapted to hold the scrubber with yielding pressure against the outer surface of the window, and to operate it vertically upon that surface by the vertical oscillation of the handle J, which will be operated inside the window.

In order to adapt the device to reach over considerable extent horizontally as well as to operate vertically on the window, the operator will use the arm D², reaching through the window below the sash for that purpose, and swinging the arm horizontally, thereby rotating the post D in its socket and carrying the scrubber laterally to desired position, the arm D² being lodged in the proper notch in the segment to retain it in such position until a vertical strip of the window has been cleaned by operating the handle J, whereupon it will be shifted to another notch and adapted to reach and clean another strip of the outer surface of the window.

Since the fulcrum of the lever J K is vertically pivoted or swiveled to the socket-plate G, and is turned about such vertical pivot to

carry the scrubber horizontally to different positions, a swivel connection is necessary in the link L which connects the lever arm K to the scrubber-operating arm E'. Such swivel connection is represented in Fig. 3, comprising a fitting L', which terminates the link L at the lower end, and affords the means for pivotal connection with the lever arm K. The upper end of this fitting is axially socketed, and receives the lower end of the main portion of the link L, which is provided with an annular groove L', into which a pin *l'*, which is set into the terminal fitting L', protrudes to detain the fitting and permit it to rotate on the main portion of the link L.

I claim—

1. In a window-washing machine, in combination with the support extended outward from the sill and the upright rotatable post supported thereon, the scrubber and its operating arm having sliding pivotal support upon said post, said scrubber being connected to said arm by a joint which provides for pivotal action in two directions only, both transverse to the arm and to each other: substantially as set forth.

2. In a window washer, in combination with the horizontal support adapted to be secured to the sill and projecting outward therefrom, and the post which extends upward from said support; the scrubber and its operating arm having sliding pivotal connection to the post, and two extensible springs both connected to the outer end of the arm, one of said springs being attached to the post, one above, and the other below, the pivot of the arm to the post: substantially as set forth.

3. In combination with the horizontal support adapted to be secured to the sill and projecting outward therefrom, the post D, erected and rotatable upon the outer end of said horizontal support; the scrubber and its operating arm having sliding pivotal support on the post; the lever J K fulcrumed on the horizontal support substantially at the vertical plane of the window; and the link L which connects its outer end to the scrubber-operating arm, said link comprising a swivel-joint between its pivotal connections: substantially as set forth.

4. In a window washer, in combination with the scrubber and its operating arm pivotally jointed thereto, and a fulcrum for such arm outside the window and adapted to be fixed with respect to the window casing; a lever having its fulcrum swiveled or vertically pivoted substantially in the vertical plane of the sash underneath the same and having an arm extending outside the window, and a link connecting said arm to the scrubber-operating arm: substantially as set forth.

5. In a window washer, in combination with the scrubber, its operating arm and the fulcrum support for the same; and means for rotating such support about a vertical line through the fulcrum of the operating arm thereon; the lever J K, and the link L con-

necting it to the scrubber-operating arm; the socket-plate G and the fulcrum piece H, vertically pivoted or swiveled in said socket plate, and the piece H' of the lever horizontally pivoted to said swiveled piece H: substantially as and for the purpose set forth.

6. In a window washer, the horizontal support; the rotatable post D erected thereon at the outer end, and scrubbing devices carried by such post and suitable means for operating the same, said post having the lever arm

or handle D² adapted to rotate it, combined with the notched segment C³ secured to the horizontal support: substantially as set forth.

In testimony whereof I have hereunto set my hand, at Chicago, Illinois, this 10th day of August, 1894.

ELLA A. STAUFFER.

Witnesses:

CHAS. S. BURTON,
JEAN ELLIOTT.