Oct. 23, 1928. 1,689,163

P. H. SUKERT

WINDOW WASHING DEVICE

Filed Sept. 30, 1927 2 Sheets-Sheet 1

Fig. 1.

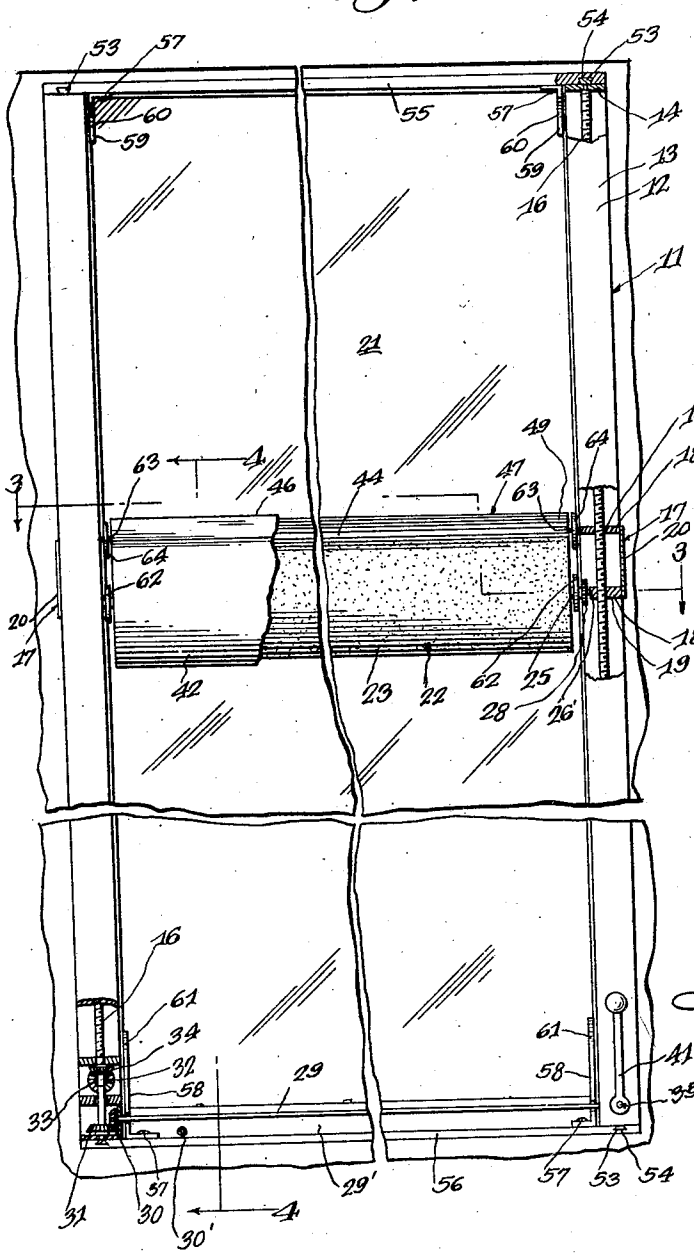
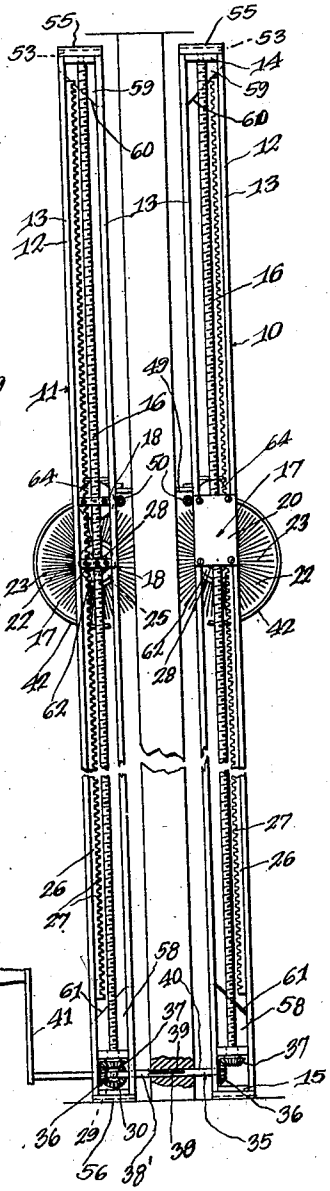


Fig. 2.



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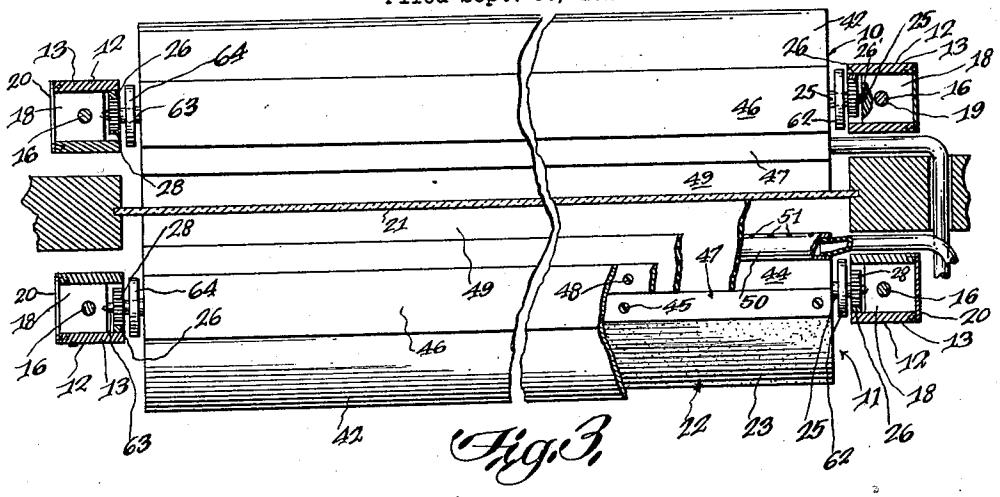


Fig. 3.

Fig. 4.

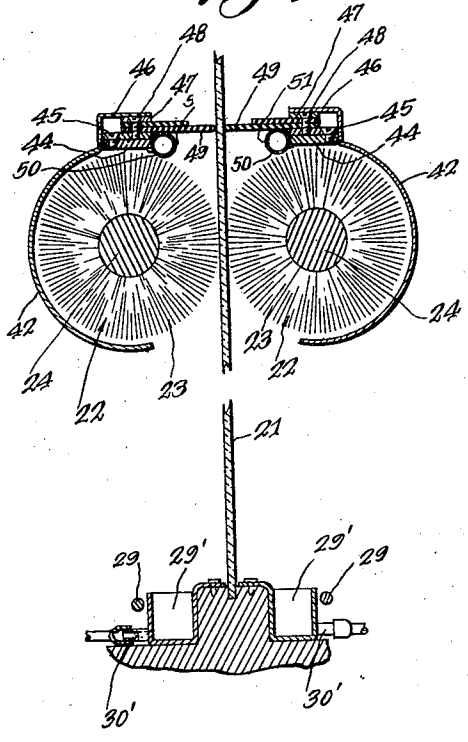
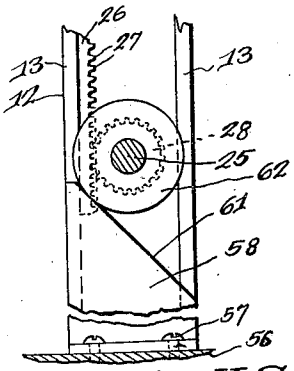


Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILIP H. SUKERT, OF CHICAGO, ILLINOIS.

WINDOW-WASHING DEVICE.

Application filed September 30, 1927. Serial No. 223,177.

This invention relates to certain novel improvements in window washing devices and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

To wash windows in homes as well as office buildings and store windows, it necessitates the window washer to place himself, to wash the outside surfaces of the window panes, upon the sills of the window construction either in sitting or standing position. By reason of the fact that the washer uses one hand for washing the window there is grave danger of him falling from his position by reason of inadequate support. It is therefore one of the many objects of this invention to provide a window washing device which is automatically operated and which is operated from inside the room wherein the windows being washed are located and one which at all times is permanently associated with the window construction for simultaneously washing the inside as well as the outside surfaces of the window panes in one single operation.

A further object of the invention is to provide a window washing device which is light in structure and easy in operation and which requires for its operation but one operator.

A still further object of the invention is to provide a window washing device which includes two brush elements operated in unison for simultaneously spreading water or other washing fluid upon the inside and outside pane of a window construction and squeegee elements which follow the path of operation of the brushes for removing the water or other washing fluid deposited by the brush elements upon the window panes.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings, showing the preferred form of construction and in which:

Fig. 1 is a part elevational and sectional detail view of the invention;

Fig. 2 is a vertical sectional detail view of the same;

Fig. 3 is a sectional detail view taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary sectional detail view taken substantially on line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary detail view of mechanism for moving the brush elements into and from contact with the glass of a window frame.

In the drawing my improved invention includes two washing elements 10 and 11, one of which being adapted to be disposed on the inside of a window construction and the other of which being adapted to be disposed on the opposite or outer side of the window construction and these two elements are adapted to be connected together for unison operation in a manner hereinafter set forth.

Each washing element includes oppositely disposed guideways 12 and these guideways each comprise opposed plates 13 connected in spaced relation with respect to each other by means of plates 14 and 15. These plates 14 and 15 rotatably support a feed screw 16 within each guideway. Operating within each guideway are carriages 17. These carriages 17 include spaced plate 18 having threaded openings 19 for the passage of the feed screw 16. The plates are connected together by means of side or outer plates 20.

Adapted to extend transversely between the guideways on each side of the window pane 21 are brush elements 22. These brush elements 22 include the usual bristles 23 mounted upon core shafts 24 having trunnions 25 mounted in recesses 26 formed in the lower of the plates 18. The outer of the plates 13 include longitudinal inwardly extending flanges 26 and these flanges 26 are provided with a plurality of teeth 27 whereby to provide rack bars for reasons hereinafter pointed out. On the trunnions of the core shafts there are mounted at each end, pinions 28 which operatively mesh with the rack bars.

The feed screws are connected for unison operation by means of a shaft 29 carrying bevel gears 30 operatively meshing with bevel gears 31 mounted on the lower end portion of the feed screws and the feed screw of one pair is connected with the feed screw of the other pair by means of a shaft 32 carrying bevel gears 33 operatively meshing with bevel gears 34 carried by these feed screws. The other feed screw of the said one pair and the other feed screw of the said other pair are operatively connected together by means of a shaft 35 carrying bevel gears 36 operatively

meshing with bevel gears 37 carried by these feed screws. This shaft 35 is of the sectional type whereby one section may be moved relatively to the other section. This is accomplished by providing a rib 38 on the section 38′ of the shaft 35 for slidable engagement in a slot 39 formed in the section 40 of the shaft 35. On the section 38′ there is mounted a suitable handle 41.

The bristles of the brush elements are encased in suitable enclosures 42. These closures 42 are preferably formed cylindrical in cross section and cover only the outer half of the brush elements whereby to prevent the slipping or dripping of water outwardly from the window pane 43. The brush enclosures are connected to a plate 44 by means of screws 45 and the upper portions of these enclosures provide horizontal flanges 46 disposed upon squeegees 47, said squeegee elements 47 being secured to the plates 44 by means of bolts 48 and the rubber portions 49 thereof are adapted to have rubbing engagement upon the window pane 43. Beneath the squeegee elements and in close proximity with the top portions of the brush elements are arranged horizontal tubes 50 having spaced perforations 51 formed therein in the direction toward the pane 43. These tubes have connection with supply tubes 52 preferably formed of rubber whereby when the brush elements and squeegee are raised or lowered relatively to the window pane these tubes 52 will follow therewith.

The plates 14 and 15 each provide dove-tailed projections 53 mounted for slidable movement in dove-tailed slots 54, said slots being of sufficient dimension whereby the dove-tailed projections 53 will have loose fit with respect to these slots. The dove-tailed slots 53 are formed in plates 55 and 56 connected respectively to the head and sill of the window construction.

At the upper end of the guideway and at the lower ends thereof there are mounted as at 57 to the plates 55 and 56 plates 58 and 59 having cam edges 60 and 61. Mounted on the core shaft are wheels 62 adapted to engage the cam edge of the plates 58. Supported by the upper of the plates 18 is a shaft 63 and on this shaft 63 are mounted wheels 64 which are adapted to engage the cam edges 60 of the plates 58.

In describing the construction of my invention, I have shown the invention associated with a window construction comprising but a single glass pane. It is obvious that the invention may be associated with any of the well-known type of window constructions such as the upper and lower sash window, a store front window, or the like. I therefore do not want to be limited to the use of the invention with but a single window pane.

The operation of the invention is as follows: Water or other washing fluid through the tubes 52 to the discharge tubes 50 may be controlled by a suitable valve. When the water or fluid is permitted to pass into the tube 50 the handle 41 is manually operated to rotate the feed screws which in turn impart rotation to the brush elements and squeegees. As the brush elements work in an upward direction water or other washing fluid is discharged and rubbed upon the window pane by the bristles of the brush. When the brush elements and squeegees reach their upper-most position the wheels 64 will engage the cam edges 60 and these wheels bearing upon the cam edges by reason of continued rotation of the feed screws, the wheels and cam edges will act to slide the guiding structures inwardly to dispose the brush elements and squeegees in contact with the window pane. Reversed rotation of the feed screw will move the brush elements and squeegees in a downward position with the squeegees in operative contact with the window pane for removing the washing fluid or water therefrom. When the brush elements and squeegees reach their lower-most position the wheels 62 will engage the cam edges 61 and move the guiding structures outwardly to dispose the brush elements and squeegees from contact with the glass and to permit these elements to be raised upwardly without working into contact with the window pane. This movement of the guiding structures is permitted by reason of the loose connection between the dove-tailed projections and slots.

It is manifest from the description herein that the brush elements and squeegees are operated in unison and by the use of a washing device of this character there is no necessity for the operator to jeopardize his life by standing or sitting upon the outside sill of a window construction in washing the glass thereof.

The dripping water drained from the window pane is caught by suitable troughs 29′ and suitable drains 30′ which may be connected with a suitable drain chamber or the like.

It will be seen that the operation of the invention is positive and automatic and requires very little skill for its operation.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification, without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. In a washing device of the class described, two brushing elements, two squeegee

structures, one brushing element and one squeegee structure being adapted to be disposed on one side of the window pane and the other brush element and squeegee structure being adapted to be disposed on the other side of the window pane in parallel relation with the said one of the brush and squeegee structure, means connecting said brush elements and squeegee structures together for unison operation, and means for supplying a washing fluid to said brush elements, said brush elements and squeegee structures adapted to extend transversely of said window pane, means for moving said brush elements and squeegee structures longitudinally with respect to said window pane, and means operable by said operating means and operation of said brush elements for moving said brush elements and squeegees into and from contact with the window pane when said brush elements and squeegee structures reach their upper-most and lower-most positions.

2. A window washing device including a pair of guide structures disposed on one side of a window pane, a second pair of guide structures disposed on the opposite side of the window pane, brush elements supported by the guide structures transversely with respect to the pane, feed screws carried by the structures, means operatively connecting the brush elements to the feed screws for moving the brush elements parallel with respect to the pane, means associated with the guide structures for rotating the brush elements during movement of the brush elements parallel with the pane, and means for operating said feed screws.

3. A window washing device including a pair of guide structures disposed on one side of a window pane, a second pair of guide structures disposed on the opposite side of the window pane, brush elements supported by the guide structures transversely with respect to the pane, feed screws carried by the structures, means operatively connecting the brush elements to the feed screws for moving the brush elements parallel with respect to the pane, means associated with the guide structures for rotating the brush elements during movement of the brush elements parallel with the pane, and means for operating said feed screws, cam members disposed at the opposite ends of the guide structures, wheel members rotatably carried by the brush elements and adapted to engage the cam members during parallel movement of the brush elements when said brush elements reach their upper and lower-most position with respect to the guide structure for moving said guide structure and brush elements laterally from the window pane.

In testimony whereof I affix my signature.

PHILIP H. SUKERT.