Dec. 18, 1934. I. GOLDSMITH 1,984,370

WINDOW CLEANING APPARATUS

Filed Feb. 11, 1930

FIG. 1

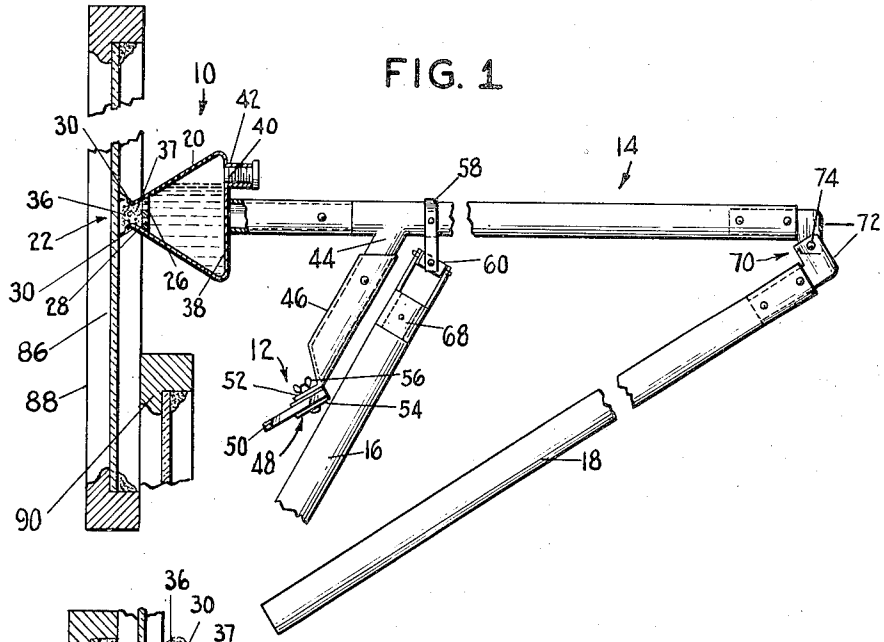


FIG. 2

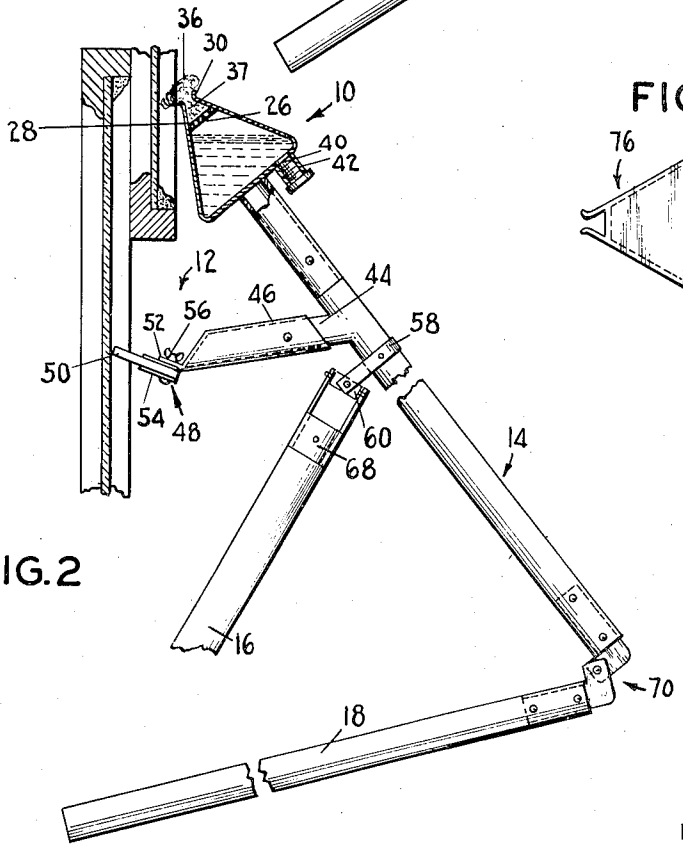
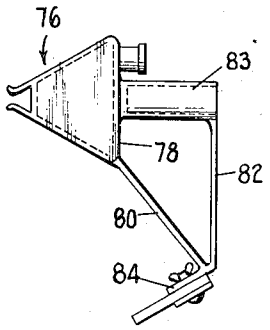


FIG. 3



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Patented Dec. 18, 1934 1,984,370

UNITED STATES PATENT OFFICE

1,984,370

WINDOW CLEANING APPARATUS

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Application February 11, 1930, Serial No. 427,452

17 Claims. (Cl. 15—126)

This invention relates to window cleaning apparatus.

It is an object of this invention to provide apparatus which will make possible the washing of the surfaces of windows which are disposed facing outwardly from a building, by a person, situated wholly within the confines of the building, such person being subjected to no danger of falling or the like, and the apparatus being simply, efficiently, and instantly adjustable either to wash or to wipe the window, at the option of the user, without removal, or addition of any parts to the apparatus.

It has been customary to dispose one's self in some manner on the outside face of a structure when it was desired to wash the outside surfaces of the panes of windows, facing outwardly from the walls of a structure. That is, either by sitting on the window sill, with the major portion of the body disposed on the outside of the building, or by standing on the window ledge, the body being entirely without the building, and held to the building by devices such as a flexible strap, the washer would ply his implements for cleaning these surfaces. The dangers inherent in either of these situations are commonly known.

Apparatus has been devised, in the past, for washing and wiping windows to avoid the necessity of so endangering the person. However, the mechanisms involved were cumbersome, expensive to manufacture, and apparently, from their construction, might require that the person positioning them for use place himself without the building. Their cumbersomeness made undesirable and impractical shifting the apparatus from window to window, as is necessary in the ordinary course of washing windows of a structure.

It is an object of this invention to provide, for the purpose of washing and wiping windows in the manner set forth, apparatus which may easily be transferred from place to place and which shall be inexpensive to manufacture and capable of operation by any inexperienced person.

For this purpose, a plurality of rods are pivotally or swivelly connected together; at the end of one of them, either a single unit having washing and wiping elements thereon, or two individual washing and wiping elements are asssembled. Preferably but two rods, in addition to the one upon which the elements are supported, are utilized, the ends of these rods being retained in the two hands of the user who positions himself at the window opening and extends the rods through the opening so that the effective portions of the washing and wiping elements are directed inwardly against an outwardly facing surface of a window pane, disposed above the level of the user's arms. The handle rods are connected to the rod carrying the cleaning elements so that, by retaining one substantially stationary and reciprocating the other, a reciprocating motion may be imparted to the elements, moving the latter over the surface of a window relative to which they may have been positioned. The rod which normally is held stationary during reciprocation of the elements is secured to the carrier rod in such position that, by movement thereof, either while the rod used for reciprocating the elements is in motion or is retained stationary, the elements or the unit may be quickly positioned to make effective either the washing or the wiping element for their respective functions.

Ordinarily, two window sashes are assembled at each window opening in such manner that vertical sliding movement of the sashes over each other, either into closed or open position, is permitted. The thickness of the sash, as well as the border width of the material of the sash within which the glass panes are mounted are factors which normally would interfere with the efficient operation of apparatus of the type herein above set forth, when it becomes necessary to wash window panes in either of the sashes. It is an object of this invention so to dispose the washing and the wiping elements that window panes in either sash may be cleaned, at the election of the operator, without interference of parts of the sashes with the operation.

In order to effectuate this portion of the invention, the elements are spaced angularly, horizontally and vertically in order to assure freedom of movement past the framework of the sashes so as not to obstruct the operation of the elements when either one element is in position to engage a window pane of a sash.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention is not restricted to the constructions and arrangements of parts herein shown and described nor to the various details thereof, as the same may be modified in various particulars without departing from the spirit and scope of the invention, some practical embodiments of which have been herein illustrated and described without attempting to show all the various forms and modifications in which the invention might be embodied.

In the accompanying drawing, in which are shown some of the various possible illustrative embodiments of this invention,

Fig. 1 is an elevational view, illustrating the application of an embodiment of the invention to washing a window, portions of the apparatus being broken away in section to illustrate the interior construction thereof.

Fig. 2 is a similar elevational view, with the windows positioned in another relative position, and the device, shown in Fig. 1, now positioned for wiping the window.

Fig. 3 is an elevational view of a modified construction of the washing and wiping element.

The embodiment of the invention shown on the drawing is seen to consist of a washing element 10 and a wiping element 12, retained upon a rigid element 14. To element 14 are secured, at spaced intervals, two handles 16 and 18, in the manner hereinafter appearing.

The washing element comprises a container 20, which may be substantially triangular or equilateral trapezoidal in cross-section. Preferably, the container is of such length that window widths ordinarily encountered may be spanned thereby without inconvenience or the requirement of awkward manipulation. The container may be constructed in any well-known manner, such as soldering several metallic sheets at the edges thereof. Preferably, it is made from a single piece of metal, cut into a desired pattern and bent to assume a desired shape. Then, either by welding, soldering, or a like operation, abutted edges are united to make a water-tight container.

One apex of the triangle may be left open, as at 22, and either by bending an end portion of one of the side walls, or by positioning a separate piece of metal across this opening, the edges of such metallic portion or piece are brought into abutment with and then soldered, welded or otherwise joined to the extending edges of the side and end walls of the container to provide a closure 26 for the container. Closure 26 is preferably perforated, as at 28, to permit the discharge from the container of liquid therein.

In the construction shown on the drawing, the side walls extend beyond closure 26, as at 30. Such extensions may also be provided by separate plates, bolted, soldered, welded or otherwise secured to the side walls of the container so that they extend beyond the closure 26 and form a retainer for a brushing device 36. A mop of wicking or other material, formed to be slipped between the extensions 30 and the closure 26, may constitute such brushing device, which may have a longitudinal portion thereof compressed and reduced, as at 37, to facilitate the assembly of the device 36 with extensions 30. The end walls of the container do not extend beyond closure 26, to permit the reduced portion of the brushing device to be easily slid into the slot between the extensions. The brushing device is of material which readily absorbs moisture as it is fed through the perforated closure; such moisture passes to the outside portions of the mop or wicking, where it may be made continuously effective to wash a window pane or the like against which the device is brought to bear. In the bottom face 38 of the container is formed a filling opening 40, from which may extend the filling neck 42, sealed by a removable screw closure.

In one modification, that shown in Figs. 1 and 2, a tubular arm is secured to the container centrally of the bottom face, in any well-known manner, and is itself received over the end of rigid element 14, to which it may be secured against relative movement in any desired manner, as by driving a pin through the arm and the element.

Extending upwardly and angularly away from element 14 at a distance, predetermined in a manner hereinafter set forth, below the washing element 10, is an arm 44. The wiping element 12 is secured at the end of the arm and is so positioned that it will extend substantially parallel to the washing element 10 on element 14. Arm 44 is preferably integrally formed with element 14, or otherwise secured thereto to provide a rigid portion for the reception of the sleeve 46 of the wiping element. The end of arm 44 is housed within the sleeve, and is pinned thereto in any suitable manner, to prevent any relative movement of these parts.

At the end of sleeve 46 is formed or secured a clamp 48, within which may be retained a rubber strip or squeegee 50, for purposes hereinafter appearing. Clamp 48 is formed in any well-known manner, the construction shown being illustrative, and not limiting. A base plate 52 may be securely mounted or formed at the end of the sleeve. A plurality of apertures are formed in strip 50, plate 52 and a pair of loose strips 54, which are aligned when the strips and the plate are assembled. Screws 56, extended through the aligned apertures, are engaged by thumb nuts to clamp the rubber strip rigidly between the metallic strips. The rubber strip is thus readily removable from such construction for cleaning or replacement.

The distance along element 14 from the washing and wiping elements to the points of connection of the handles 16 and 18 must be such that if one of the handles be held substantially stationary and the other be moved vertically, movement of the elements will be such that the end edges thereof will traverse a surface of practically no curvature, that is, the movement of the effective surface of the element will be substantially within a vertical plane. However, if the relative conditions of the two handles be now changed, it is desirable that the washing and wiping elements may be quickly moved from and into effective position. For this purpose, sharp arcuate motion with a minimum vertical movement is desired.

To attain these results, handle 16 is secured to element 14 intermediately thereof and as close to the washing and wiping elements as possible, while handle 18 is removed as far as practicable both from the connection of handle 16 to element 14 and the washing and wiping elements. Handle 16, held rigidly in one hand, provides a pivot around which the elements may be rocked to bring their effective portions selectively in position as the handle 18 is moved to rock element 14. Handle 18, held rigidly, positions the selected element relatively to a window pane to be washed so that vertical motion of handle 16 may effect movement of the selected effective element substantially parallel to the window pane.

Handle 16 is secured to element 14 in any suitable manner; preferably, the union of handle 16 and element 14 is effected either at the junction of the element with the arm 44, or on a point along arm 44 or element 14 closely adjacent said junction. On the drawing, a split ring 58 is shown slipped over and secured to element 14 in a desired position so that a universal connection 60 may be coupled thereto and to an end of handle 16. A metallic sleeve 68, slipped over and held to the end of the handle, may provide the portion of handle 16 to which the connection is coupled. A swivelling connection is thus provided, permit-

ting side play, as well as vertical movement of handle 16, in the manipulation of the washing and wiping elements.

Handle 18 is preferably secured to element 14 at the end of the latter removed from the washing and wiping elements. In order that the handle may be folded up against the element 14, when desired, and also to permit a great range of movement, the pivotal connection between handle 18 and element 14 is composed of two flat L-shaped members 70, secured in the slotted ends of the element and the handle, in any suitable manner. The extending ends of the opposed feet 72 of these members are pinned, as at 74, for pivotal movement relative to each other. A distinct spacing of the handle away from element 14 results so that the handle is capable of movement through a range of approximately 180°. When the handle is to be positioned against the element 14, sufficient side play is afforded at the pivot connection described so that the outer end of the handle may be slid along and past clamp 48.

In a preferred embodiment of the invention, arm 44 is eliminated, and container 20 and clamp 48 are made into an integral member. This construction is shown in Fig. 3, in which container 76 is constructed similarly to container 20, and is mounted upon the end of rigid element 14 in substantially the same manner. Secured to the bottom face 78 of the container is an outwardly and downwardly extending plate 80, stayed by another plate 82, extending from sleeve 83. The outer end of the plate is formed with an angularly upward bent face 84, corresponding in position and direction of tilt to that of the plate 52 of Figs. 1 and 2. With face 84 may be assembled a loose strip, similar to strip 54, for retaining a rubber strip in place, in the same manner as in the other construction. In this manner, the washing and wiping elements are assembled in a practically unitary construction having the required strength and adjustability.

In Figs. 1 and 2 are illustrated two positions of using the washing and wiping elements for their specific purposes. In Fig. 1, the washing element has been brought into position relative to the window pane 86 of a window sash 88. In double sash window constructions, another window sash 90 is slidably disposed for vertical movement relative to sash 88, as shown. To eliminate interference from the thickness of the window sashes, as well as the width of the frame thereof, as deterrents against the ready accessibility of the washing and wiping elements to all parts of a window, the wiping element is spaced away from the washing element along the element 14 sufficiently so that the rubber strip will clear the upper edge of the outer window sash when washing the window of an associated inner sash, as seen from Fig. 1.

In addition, arm 44 is angularly disposed relatively to element 14 so that the strip may be brought into properly related position with a window pane and also to space the washing element laterally from the wiping element when the latter is operative, as in Fig. 2. When the wiping element is brought into contact with the window pane of an inner sash after the outer sash has been slid upwardly to clear that window pane, the angular and lateral spacing of the wiping elements will permit proper manipulation of the wiping element, the body of container 20 clearing the frame of the outer sash and permitting the squeegee to have access to the uppermost portions of the window pane.

As many changes could be made in the above constructions and many apparently widely different embodiments of the invention designed without departing from the scope and spirit of the invention, as defined in the accompanying claims, it is intended that all matter contained in the above description or shown in the drawing shall be interpreted as illustrative merely of operative embodiments of the invention and not in a limiting sense.

I claim:

1. In combination, a window washing element, a window wiping element, a supporting rod retaining both of said elements, said elements being disposed in spaced angular relation on said rod so that, when either is positioned in effective relation to a window surface to be cleaned, the other will be clear of all portions of said window, and means engaging said rod for positioning said elements to direct their effective portions toward the operator, said means being operable to position either of said elements selectively with relation to a surface to be cleaned, obversely located relatively to the position of the operator, and to make that element individually operative in its cleaning function upon the window surface while simultaneously being operative to move said elements along said surface.

2. In combination, a window washing element, a window wiping element, a supporting rod retaining both of said elements, said elements being disposed in spaced angular relation on said rod so that, when either is positioned in effective relation to a window surface to be cleaned, the other will be clear of all portions of said window, and means engaging said rod for positioning said elements to direct their effective portions toward the operator, said means being operable to position either of said elements selectively with relation to said surface to make that element individually operative in its cleaning function upon the window surface.

3. In apparatus of the class described, a pair of pivotally connected members, window washing and wiping means mounted on one of said members, and a manipulator engaging said member on one side thereof, the effective portions of said means being disposed to extend substantially in the same general direction from said member, and in the same general direction as that of the manipulator with relation to the member, the other of said members and said manipulator providing mechanism for positioning said means selectively to wipe or to wash a surface on the side of a window located obversely relatively to an operator of said apparatus.

4. In apparatus of the class described, a pair of pivotally connected members, means to wash and means to wipe a window, said means being mounted on one of said members, and a manipulator engaging said member, the other of said members and said manipulator providing mechanism for positioning said means to extend in the general direction toward the operator holding the manipulator and to arrange the individual means selectively either to wipe or to wash a surface on the side of a window located obversely relatively to an operator of said apparatus.

5. Apparatus for window cleaning and like operations, including a washing element, a wiping element, means for retaining the elements in spaced relation, and handle means extending downwardly from and movable with relation to the retaining means, the handle means being adjustable, without rotation, to arrange either of

the elements in relation to a surface to be cleaned, said elements and handle means being associated to make the elements operative to clean a surface disposed above the handle means.

6. A window cleaning appliance including window washing and window wiping elements, a support for the elements, and a pair of manipulators engaging the support, said manipulators being operative simultaneously to position the support to bring either of the elements into position to clean a surface and/or to move either of the elements along the surface.

7. A window cleaning appliance including window washing and window wiping elements, a support carrying the elements at an end thereof, and a pair of manipulators engaging the support beyond the end carrying the elements and in spaced apart relation to each other, said manipulators being operative to position the support to bring either of the elements into position to clean a surface and/or to move either of the elements along the surface.

8. A window cleaning appliance including window washing and window wiping elements, a support carrying the elements at an end thereof, and a pair of manipulators pivotally engaging the support beyond the end carrying the elements and in spaced apart relation to each other, said manipulators being simultaneously operative to position the support to bring either of the elements into position to clean a surface and/or to move either of the elements along the surface, the manipulators and the elements, when the appliance is in use, extending substantially in the same general direction,

9. An appliance for cleaning the outside surfaces of windows of a structure by manipulation from within the structure, including window washing and window wiping elements, a support carrying the elements at an end thereof, and a pair of manipulators pivotally engaging the support beyond the end carrying the elements and in spaced apart relation to each other, the relation of the manipulators and support being such that, when all are extended through a window opening, adjustment of the manipulators will position either of the elements to clean an outside surface of a window at the opening, the manipulators being thereafter effective to move either of the elements along the surface.

10. In combination window cleaning apparatus having elements supported upon a single mounting for facility in effecting the steps of the cleaning operation, including a device for scrubbing the window, the device including a window cleaning liquid feeding means and a window surface scrubbing element, the liquid feeding means carrying the scrubbing element and being constantly in liquid supplying communication therewith, and a device for wiping the window after it has been scrubbed by the scrubbing device, a single support for the devices, the devices being arranged on the support in spaced angular relationship so that when either of the devices is in operative contact with a surface to be cleaned, the other device will extend toward and be immediately available for the performance of its function in relation to the window surface.

11. In window cleaning apparatus, a plurality of interconnected members, and window washing and wiping means mounted on one of said members, the effective wiping and washing portions of said means being disposed to extend substantially in the same general direction from said member but at an angle to each other, so that, when the effective wiping portion is in engagement with a surface to be cleaned, the effective washing portion will extend toward the surface but will not be in engagement therewith, and vice versa, said members being actuable to position said means to make either of the effective portions individually active to perform its particular function, and to move said means with relation to the surface of a window to be cleaned.

12. In combination window cleaning apparatus capable of functioning both to wash and to wipe a window surface to be cleaned, a plurality of substantially rigid arm members, said members being interconnected so that the members may have movement with relation to each other, and window washing and wiping elements carried upon one of the members, said members including a pair of manipulators, the window washing and wiping elements, when the manipulators are grasped, being directed toward a surface to be cleaned, movement of the manipulators then moving the elements to determine which of them shall be effective at any one time against that surface, the manipulators then functioning to effect motion of the selected element with relation to that surface.

13. In combination window cleaning apparatus capable of functioning both to wash and to wipe a window surface to be cleaned, a plurality of substantially rigid arm members, said members being interconnected so that the members may have movement with relation to each other, and window washing and wiping elements carried upon one of the members, said members including a pair of manipulators, the window washing and wiping elements, when the manipulators are grasped in the hands of an operator, being directed toward a surface to be cleaned, the manipulators without change out of their grasped relationship to the hands of the operator, but merely by movement of the hands, determining which of the elements shall be effective at any one time against that surface, the manipulators then functioning to effect motion of the selected element with relation to that surface.

14. In apparatus for cleaning window surfaces, a plurality of rigid members, a pair of the members being pivotally connected to each other to move pivotally in the same plane, means for washing windows and means for wiping windows, both of the means being mounted on one of the members to extend from the member in the same general direction as that of the member, and a handle engaging the mounting member closely adjacent the point of mounting of the means.

15. In apparatus for cleaning window surfaces, a plurality of rigid members, the ends of a pair of the members being pivotally connected to cause the members to move pivotally in the same plane, means for washing windows and means for wiping windows, both of the means being mounted on the free end of one of the members and extending from the member in the same general direction as the direction of the member, and a handle engaging the mounting member closely adjacent the point of mounting of the means, the surface-engaging portions of the means being in a plane meeting the mounting member at an acute angle.

16. In apparatus for cleaning window surfaces, a plurality of rigid members, the ends of a pair of the members being pivotally connected to cause the members to move pivotally in the same plane, means for washing windows and means for wiping windows, one of the means being mounted on the

free end of one of the members and having its surface-engaging portion extending in the same direction as that member, the other means having its surface-engaging portion disposed to extend in the same general direction but angularly away from the member, and a handle engaging the mounting member closely adjacent the point of mounting of the means.

17. In apparatus for cleaning window surfaces, a plurality of rigid members, the ends of a pair of the members being pivotally connected to cause the members to move pivotally in the same plane, means for washing windows, the means being mounted on the free end of one of the members and having its surface-engaging portion extending in the same direction as that member, means for wiping windows, the wiping means being mounted on the member to have its surface-engaging portion disposed to extend in the same general direction but angularly away from the member, and a handle engaging the mounting member closely adjacent the point of mounting of the means.

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