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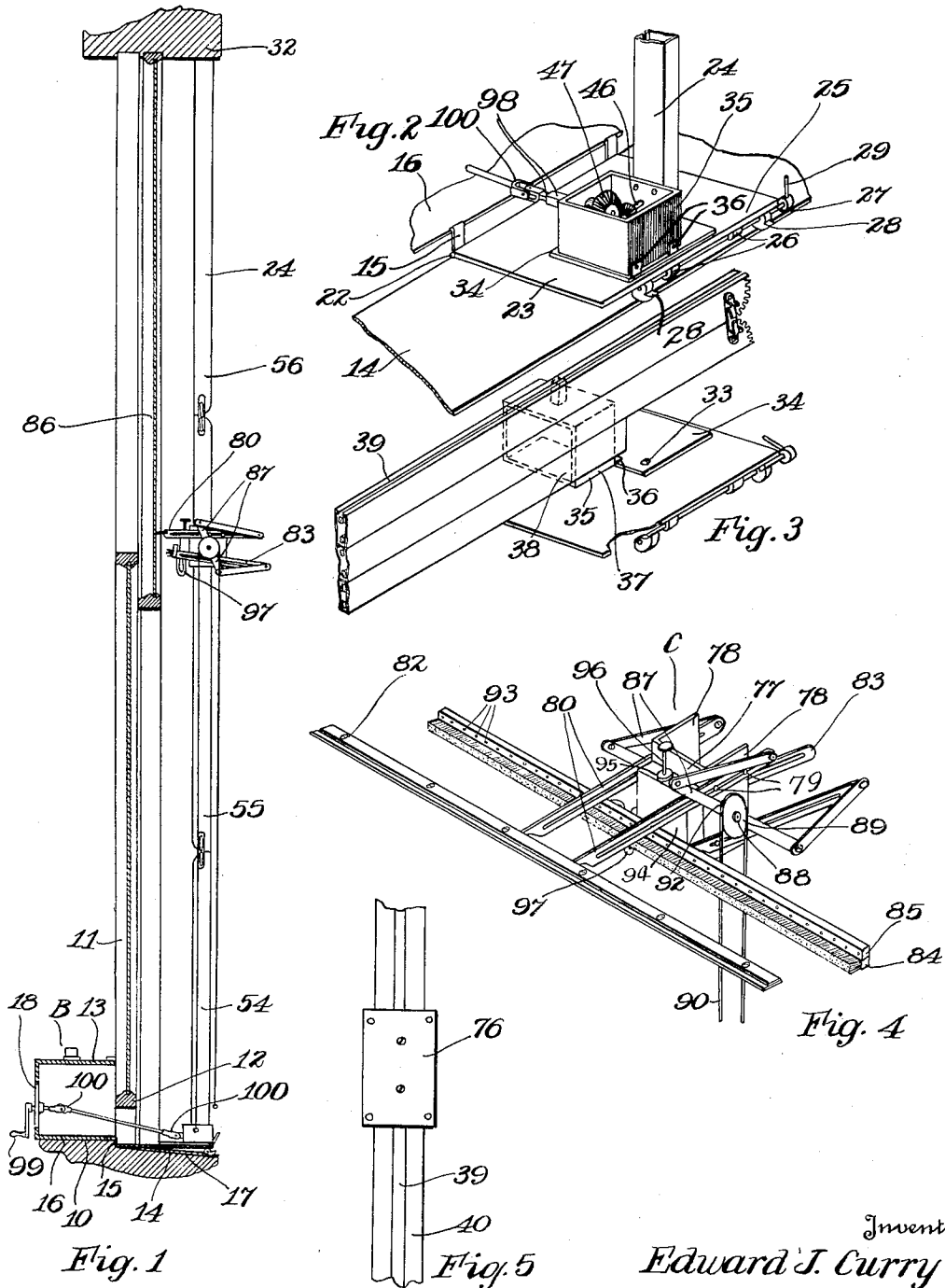
E. J. CURRY

1,922,078

WINDOW CLEANING DEVICE

Filed June 10, 1929

2 Sheets-Sheet 1



Inventor
Edward J. Curry

By *Howard Kucher*
Attorney

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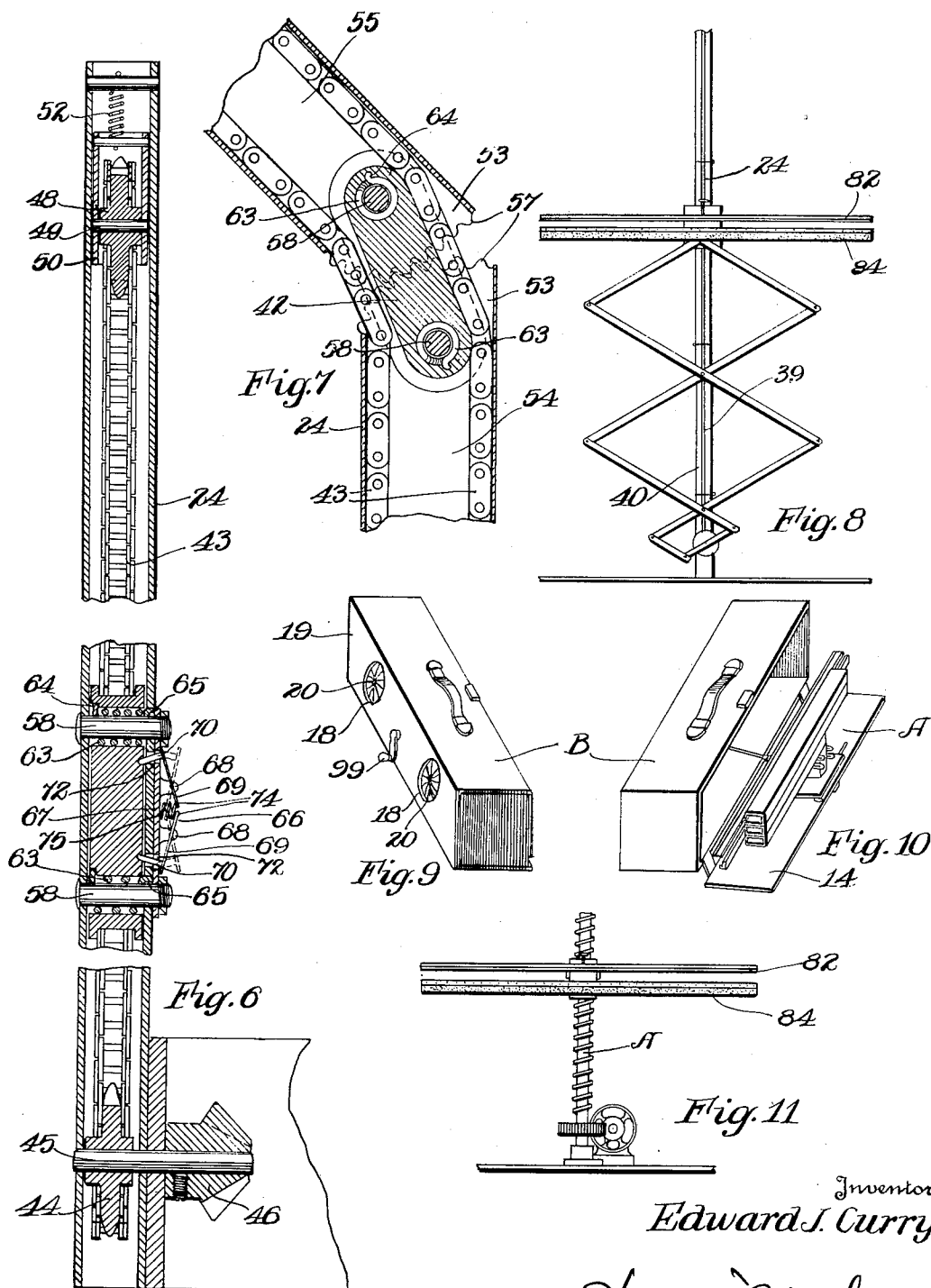
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Inventor
Edward J. Curry

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Donald Fisher

Attorney

UNITED STATES PATENT OFFICE

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WINDOW CLEANING DEVICE

Edward J. Curry, St. Paul, Minn.

Application June 10, 1929. Serial No. 369,548

10 Claims. (Cl. 15—251)

My invention relates to an improvement in a window cleaning device, wherein it is desired to easily and safely clean the outer surface of a window while standing within a building.

5 The object of my invention is to provide a device which will operate very simply and easily to thoroughly clean the outer surface of a window without the necessity of standing outside the building or reaching out of the window. My device is equipped to wash the window thoroughly and also to scrape the window to remove the water therefrom.

15 A feature of my window cleaning device resides in permitting a fine spray of water to be forced upon the outer surface of the window in the path of a brush which acts to loosen the dirt upon this surface of the window pane. Having the spray integral with the window cleaner eliminates the necessity of wetting the brush or of having to wet the window before the brush can be used.

25 It is a feature of my invention to attach a rubber scraper or the like in conjunction with the brush and spray so that when the window has been washed and the dirt thoroughly loosened, the water and dirt can be scraped from the surface, leaving the pane dry.

30 It is an important feature of my invention that the entire mechanism may be built in a very light and compact form, so that it may be enclosed within a box as long as the width of the window and of but narrow width and depth. Thus, my cleaner is a commodity which may be used to lighten household work and which may be easily operated by the housewife. By being of a very compact nature, it may be easily carried from room to room of an office building without its bulkiness or size being prohibitive of free movement and quick action.

40 It is my object to construct a window cleaner which will eliminate the necessity of opening the windows wide while they are cleaned, allowing a strong draft of air to enter the room. My construction is such that the box containing the cleaner obstructs the entrance of air as the window is opened the necessary few inches so that objects within the building will not be blown about or disturbed by gusts of wind while the outside of the window is being cleaned.

50 My purpose is to contain a collapsible guide post within a box-like container and to so construct this post that it may be easily erected outside the window without the necessity of raising the window but a few inches. I place a carriage upon this guide post which may be raised or lowered from within the building, and mounted upon this carriage is the before mentioned brush and scraper.

60 It is further my desire to form a cleaning device which is safely operated from within a

building, to eliminate the risk of standing outside and washing the windows and to safeguard the operator.

Further novel features and objects of my invention will become apparent in the following specification and claims:

In the drawings forming a part of this specification.

Figure 1 is a cross section of a window frame, showing my cleaner in place.

Figure 2 is a perspective view of a portion of my cleaner with the guide post erected.

Figure 3 is a perspective view of a portion of my device with the guide post collapsed.

Figure 4 is a perspective view of the carriage bearing the brush, scraper and spray, and their method of operation.

Figure 5 is a detail view of a portion of the guide post and the attaching plate for the carriage.

Figure 6 is a sectional view of the guide post.

Figure 7 is a sectional view of one of the joints of the collapsible guide post.

Figure 8 is an alternative method of elevating the carriage upon the guide post.

Figure 9 is a perspective view of my cleaner contained in its carrying box.

Figure 10 is a perspective view of the carrying box opened out showing the guide post in collapsed form.

Figure 11 is another alternative form of elevating the carriage in conjunction with an electric motor.

My window cleaning device A is shown in operation in Figure 1. The container B is placed upon the window stool 10, the lower window sash 11 is raised until the lower edge 12 of the sash 11 is even with the cover portion 13 of the container B, and the side 14 of the container B, hingedly connected by the strips 15 to the bottom 16 of the container B is allowed to rest along the window sill 17. As the window sash 11 has not been raised above the cover portion 13 of the container, and as the container extends the length of the stool 10, no wind is allowed to enter through the aperture formed by raising the window, the container virtually blocking the path of the air. The latch holding the side 14 of the container in closed position is operable from the inside of the container through arm 18 in the inner side 19 of the container B. These holes may, if desired be equipped with rubber closures 20, which stretch to allow the arms of the operator to pass through the holes 18.

Hingedly connected at 22 to the side 14 of the container, I attach the rear edge of a plate 23 which acts as a base for the guide post 24. Below the front edge 25 of the plate 23, I form bearings 26 for a shaft 27. Upon this shaft 27 a pair of cams 28 are attached, and an operating

lever 29 is mounted on one end of this shaft. The cams are of such a design that when the operating lever 29 is moved, the cams 28 are rotated, forcing the plate 23, acting as the base of the guide post 24 away from the side 14 of the container, and forcing the erected guide post 24 against the lower edge of the upper portion 32 of the window frame.

Pivotaly connected at 33 to the base plate 23, I construct a smaller plate 34. To this small pivoting plate 34, I connect the gear box 35 by means of the hinges 36. On the side 37 of the gear box 35 I attach the lower end 38 of the guide post 24. This post 24 is constructed rectangularly of a light sturdy metal, is hollow, and has a slot 39 extending upwardly virtually its entire length in one of its surfaces 40. The post 24 is cut into lengths so that it will fold into the container B, and is equipped with hinges 42 of the type illustrated in Figures 6 and 7. By pivoting the plate 34 until the side 37 of the gear box 35 is parallel with the window sill, as shown in Figure 3, the gear box 35 may be tipped on its hinges 36 and the post 24 then folded.

Within the post 24 I place an endless chain 43 which is propelled by the sprocket 44 mounted upon the shaft 45 extending through the side 37 of the gear box 35 into the gear box. Upon this shaft 45 is mounted a bevel gear 46 which meshes with a second bevel gear 47 flexibly connected to the operating handle. These gears 46 and 47 are of the correct size to give the proper reduction ratio desired.

The endless chain 43 extends throughout the length of the guide post 24 and passes over the sprocket 48 at the upper end of the post 24. This sprocket 48 is mounted on the shaft 49 in the casing 50. The casing 50 is small enough to slide vertically in the hollow post 24 and is pulled under spring tension toward the top of the post 24 by the action of the spring 52, thus keeping the chain taut at all times and yet permitting sufficient flexibility to allow the post 24 to be folded.

The adjacent ends 53 of the sections 54, 55, and 56 of the post 24 are rounded and cut to form teeth 57 which engage and compel the post 24 to fold evenly and neatly. The hinge 42 connects the pivot points 58 and fits within the sides of the post 24. These hinges 42 have flanges formed on either side of the chain 43 to guide the path of the chain. About the pivots 58, I place the small coil springs 63 which have one end 64 anchored into the hinge member 42 and have their other end 65 anchored into the post 24. These springs 63 are under tension acting to aid the opening of the post into extended form.

A lock 66 holds the post 24 in extended form, and prevents the collapse of the post prematurely. These locks are formed of strips 67 having ears 68 extending upwardly from the body of the same to provide a pivoting point for a pair of levers 69. These levers 69 have engaging fingers 70 upon one end adapted to extend through the holes 72 in the strips 67, through the post 24 and into the hinge member 42 when the post is extended. When the post is in folded or partially folded state, the holes in the post 24 and the hinge member 42 do not coincide with the holes 72 formed in the strips 67, and the engaging fingers 70 slide upon the side of the post 24. By pressing with the thumb upon the ends 74 of the levers 69, the fingers 70 are forced against spring tension of the spring 75 out of engagement with the post 24 and hinge 42, and the post may be folded.

Connected to the chain 43 through the slot 39, I form an attaching plate 76, to which may be attached the carriage C bearing the brush, scraper and water spray. This attaching plate 76 moves along the side 40 of the guide post with the movement of the chain 43 within the post 24 adjacent this side 40. The carriage C is formed with a flat front member 77 which is bent at right angles to form side portions 78. Slidably attached by the bolts 79 to the sides 78 of the carriage are a pair of arms 80 which hold a scraper 82 of rubber or other analogous material for wiping the window pane clear of water and dirt after the dirt has been loosened. Another pair of arms 83 hold a brush 84 and spray member 85 and are similarly slidably attached to the sides 78 of the carriage C.

Either the scraper 82 or the brush 84 should be in contact with the window pane 86 at all times except when the apparatus is being changed from one window to another. To operate the slidable arms 80 and 83 to move the scraper 82 and brush 84 into and out of contact with the glass 86, I construct a pair of levers 87, mounted on either side 78 of the carriage C. These levers 87 are pivoted at their mid point 88 and have one end connected to the arms 80 and have their other ends connected to the arms 83. A pulley 89 is mounted on one of the levers 87 at its pivot point 88 and a cord 90 fastened to the pulley at the point 92 rides in the groove of the pulley. Thus, when one end of the cord 90 is pulled, the scraper is forced into contact with the pane 86, and when the other end of the cord 90 is pulled, the brush and spray are forced against the surface of the glass 86.

The spray member 85 has a number of holes 93 through which water is forced. The water is put into a tank 94 through the cap 95 which has integral with it a small air pump 96, by means of which an air pressure may be pumped into the space above the water in the tank. The water flows by pressure through the hose 97 into the spray member 85. The holes 93 are very small and the water from the tank 94 will not flow unless forced by pressure.

It is possible to raise and lower the carriage by other means than by using the chain without departing from the spirit of the invention. Such alternate methods are shown in Figures 8 and 11. Figure 8 indicates the method of raising the carriage by means of a pantagraph arrangement of levers. Figure 11 illustrates a revolving threaded post, being driven by an electric motor by means of a worm and gear. Other analogous mechanical means may likewise be used to raise and lower the brush 84 and scraper 82.

In the operation of my cleaner, it is only necessary to place the container B upon the window stool 10, to open the window sufficiently to permit the hinged side 14 to open out upon the sill 17, to unfold and lock the guide post 24, to erect it, and tighten it by the cams 28 against the window frame 32, to connect the splined portions 98 of the shaft of the gear 47 together so rotation of the operating crank 99 extending through the inner side 19 of the container B, will be transmitted through a pair of universal joints 100 to the gear 47. The air pump 96 is given a few strokes to permit water to spray through the holes 93 for the necessary short space of time, and the carriage is raised and lowered at will by turning the crank 99 brushing the window as it rises and scraping the pane dry as it descends.

To clean the extreme upper portion of the

lower window pane, it is only necessary to set the brush 84 into engagement with the lower pane as high up upon the pane as the upper sash permits, to disconnect the splined portions 98 and to lower the lower sash. The brush comes into contact with the extreme upper portion of the lower pane in this manner. If necessary the pane may be raised and lowered several times the brush 84 remaining stationary. To dry the window, this procedure may be repeated the scraper 82 having been placed in contact with the pane in the place of the brush 84.

I believe I have filled a long felt want in providing a window cleaning device which is easily and quickly operable, is efficient, and requires but little skill to handle. In addition to being a great convenience it is a valuable aid in the protection of the operator.

In accordance with the patent statutes, I have described the principles of operation of my window cleaner and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that the same is only suggestive of a means of carrying out my invention and that obvious changes may be made within the scope of the following claims without departing from the spirit of the invention.

I claim:

1. A window cleaning device including, a collapsible frame comprising foldable sections, said sections adapted to be extended from top to bottom of a window frame, means for cleaning the outside of the window pane when said frame is extended in the window frame, and means within the building on the inside of the window being washed for operating said cleaning means.

2. A window washing device comprising, means for washing and wiping the outside of a window, means for slidably supporting said washing and wiping means operable to selectively slide the washing and wiping means into engagement with the outside of a window, and means within the building adapted to move said washing and wiping means over the outer surface of the window.

3. A window washing device including, a collapsible carrier adapted to extend and be secured between the top and bottom of a window frame, washing and wiping members supported by said carrier, means for operating said washing and wiping means selectively into operative position against the outside of a window, and means for operating said washing and wiping means lengthwise of the window from within the building, whereby the operator may stand within a building and wash and wipe the window.

4. A window cleaning device including, a casing, a collapsible supporting frame standard adapted to be placed within said casing, said standard being adapted to extend in the outside portion of the frame of a window with the casing on the stool of the inside of the window, means for clamping said standard in the window frame, a washing member including a supply of washing liquid, means for supplying the washing liquid to the window washing member, said washing member slidable along said standard, and means operable from the inside of the window to move said washing member while in contact with the outside of the window to wash the same.

5. A window cleaning device comprising, a carrier forming a casing for inclosing the folded together cleaning device, a standard supporting means extendible along the outside of a window when said casing is opened, a pair of slidable

holders operable simultaneously carried by said standard a washing means in one of said holders, a wiping means in the other of said holders, means for operating either said washing or wiping member into engagement with the outside of the window, and means within the window extending from said casing for operating said washing and wiping members to wash and wipe the outside of the window.

6. A window cleaning device including, collapsible means adapted to be extended and secured rigidly between the top and bottom members of a window frame, cleaning means comprising a brush and a source of supply of water and a rubber wiper, means for supporting said cleaning means movable along said collapsible means in a manner to travel up and down against the outside of the window pane, and means for selectively operating said cleaning means into contact with the outside of a window.

7. A window cleaning device for cleaning the outside of a window from the inside of the same including, a standard adapted to be extended and secured rigidly between the top and bottom members of a window casing, a washing and wiping means, means for operating said washing and wiping means selectively into contact with the outside of a window, and means within the window for operating said washing and wiping means along said standard.

8. A window cleaning device including, a casing, a foldable and projectable standard adapted to be supported collapsed within said casing to conceal the same when not desired for use, a washing and a wiping member carried by said standard, means on said casing for operating said washing and wiping members when said standard is projected along the outside of a window so that the window can be washed and wiped by the operator standing on the inside of the window and means for selectively operating said washing member and said wiping member into contact with the outer surface of the window.

9. A window cleaning device including, a washing member, a washing liquid supply means carried by said washing member, means for directing a fine spray of liquid to said washing member and the outside of a window, a wiping member adapted to be slidably substituted for said washing member in contact with the outside of a window to wipe the window after it is washed, means for selectively sliding said washing and wiping members into contact with the window, a collapsible standard for supporting said washing and wiping members, and an operating handle extending within the window adapted to operate said washing and wiping members up and down said standard to cleanse and dry the window.

10. A window cleaning device including, a collapsible supporting means, a carriage movable along said means, washing and wiping members slidably mounted on said carriage, means for slidably operating either of said members separately and selectively into contact with the outside of a window, means associated with said standard for operating said washing and wiping members up and down the window, and means within the window for operating said washing and wiping operating means associated with said standard from a position inside of said window.

EDWARD J. CURRY.