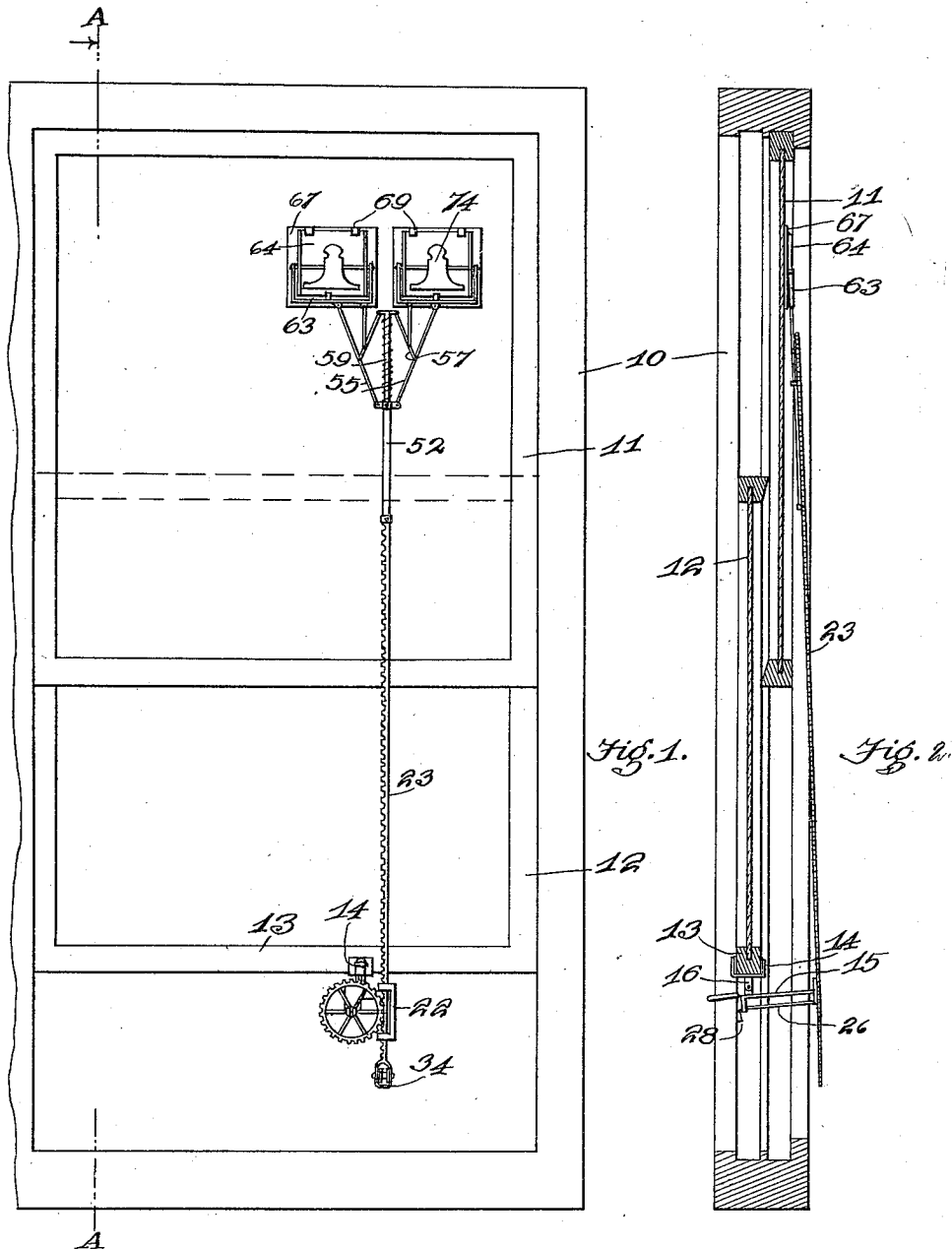


C. B. RUNGE.
WINDOW CLEANING DEVICE.
APPLICATION FILED AUG. 3, 1914.

1,140,001.

Patented May 18, 1915.
2 SHEETS—SHEET 1.



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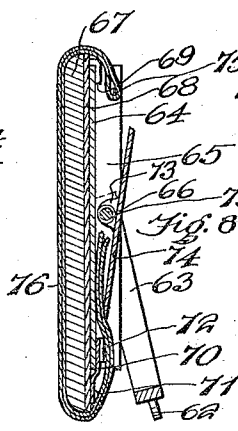
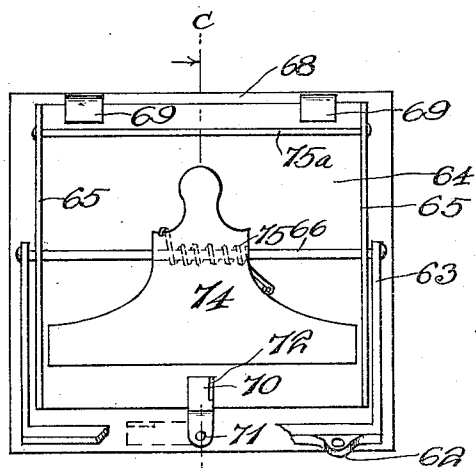
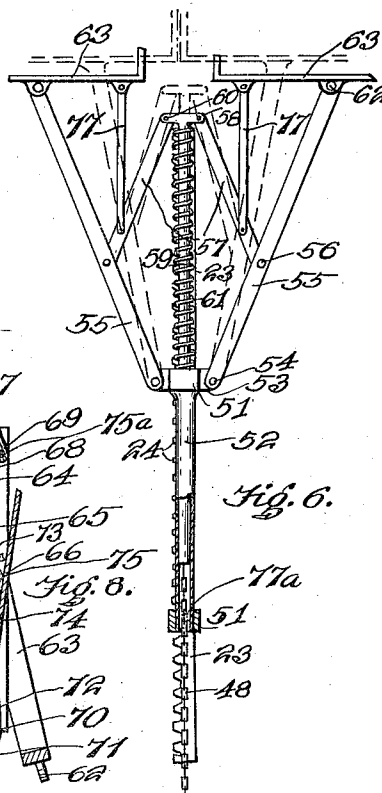
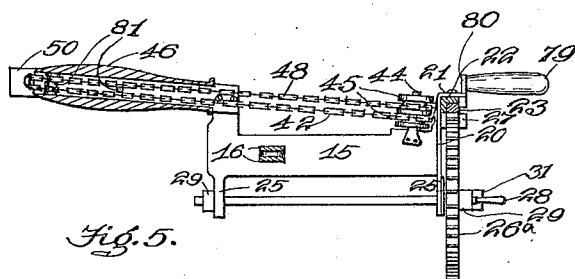
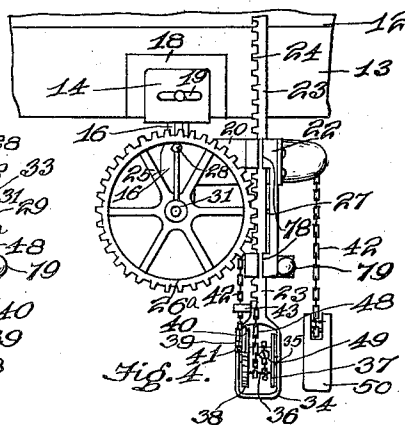
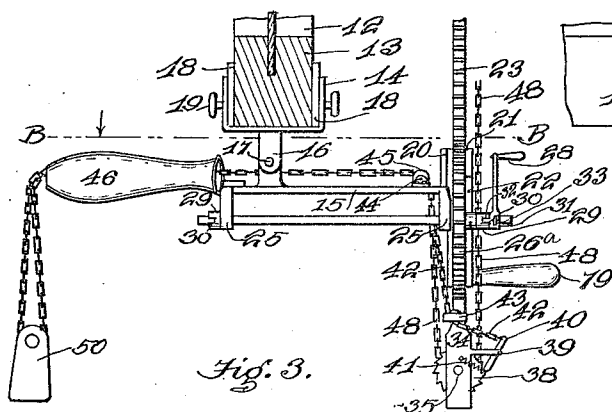


Fig. 7.

Fig. 6.

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WINDOW-CLEANING DEVICE.

1,140,001.

Specification of Letters Patent.

Patented May 18, 1915.

Application filed August 3, 1914. Serial No. 854,800.

To all whom it may concern:

Be it known that I, CHARLES B. RUNGE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Window-Cleaning Devices, of which the following is a specification.

This invention relates to cleaning devices for windows and its object is to provide a simple and efficient device which is operative from within the room.

In the accompanying drawings, Figure 1 is an elevation of a window showing the application of the device; Fig. 2 is a vertical section taken on line A—A of Fig. 1; Fig. 3 is an enlarged view of the actuating mechanism corresponding to Fig. 2; Fig. 4 is another view of the same corresponding to Fig. 1; Fig. 5 is a horizontal section of Fig. 3 taken on line B—B thereof; Fig. 6 is an enlarged view of the cleaning-pad support; Fig. 7 is an elevation of one of the cleaning-pad holders; and Fig. 8 is a vertical section of the same taken on line C—C of Fig. 7 also showing the manner in which the cleaning cloth is mounted on the holder.

Referring specifically to the drawings 10 denotes the frame of a window having an outer sash 11 and an inner sash 12. The actuating portion of the cleaning device is shown secured to the bottom rail 13 of the inner sash, the latter being in partly raised position.

A clamp 14 connects the bottom rail 13 with the base plate 15 of the apparatus, the clamp having two depending ears 16 which are linked at 17 to a finger projecting from the base plate 15. Both sides of the clamp are provided with a jaw 18 on the inside and a thumb screw 19 to operate the latter, the object of the double jaw being to provide a clamping means on the inside of the window whether the clamp 14 is mounted as shown or in reversed position.

The base plate 15 extends transversely of the window, having the portion on one side of the latter much longer than that on the other side. Said longer portion terminates in a short flange 20 bent upward at right angles from the plate. At one end, this flange has a right-angle bend 21 within which is secured the upper portion of a short vertical tube 22 of rectangular cross-section. In this tube is slidably disposed a long bar 23 rectangular in section to cor-

respond to the bore in the tube, the bar having a rack of gear teeth 24 on the face remote from the bend 21 aforesaid. The base plate 15 also has extending from the side opposite from the bend 21 two ears 25 which form a bearing for a spindle 26 extending parallel to and at one side of the base plate. The outer end of the spindle carries a gear 26^a which is positioned to mesh with the rack bar, one side of the guide tube 22 being cut out, as shown at 27, to permit the meshing of the gear and bar. The gear is designed to be rotated manually and provision is made at both ends of the spindle 26 for the reception of a crank handle 28. This consists of a drum 29 having a central bore to admit of its being rigidly mounted on the end of the spindle and also having a diametrical groove 30 in its outer end. The crank handle 28 has a similar drum 31, centrally apertured to slidably fit the spindle and having a diametrical bead or projection 32 on its inner face. When the bead 32 seats in the groove 30, the spindle becomes operatively connected to the crank handle. A thumb screw 33 in the side of the crank handle drum 31 may be advanced on the spindle to prevent the crank handle from becoming disengaged.

The bottom of the rack bar 23 is flattened and parted to form a loop 34, the sides of the loop being parallel to the toothed face of the bar. Between said sides is mounted a pin 35 on which is rotatable a drum 36 having a flange 37 at one end and a ratchet disk 38 at the other. From the side of the loop adjacent the ratchet projects a finger 39 which forms the fulcrum of a dog 40 which is engageable with the periphery of the ratchet. The pointed end of the dog is normally drawn into contact with the ratchet by a spring 41 extending from the side of the loop 34; while the outer end of the dog takes a chain 42 which extends upward through an idler 43 to base plate 15. Thereat the plate has mounted an outstanding pin 44 on which are loosely mounted two spaced rollers 45. The chain 42 passes up and over one of these rollers and across to the opposite end of the plate into a hollow handle 46, which is rigidly connected to the base plate. In the handle 46 and alongside the chain 42 is a similar chain 48 which likewise extends across the base plate 15 and over the second roller 45, but descends directly onto the drum 36, taking a full turn around same and

ascending alongside the rack bar 23 to the window cleaning apparatus to be described presently. The chain 48 is secured to the drum 36 at one link by a set screw 49, as shown in Fig. 4, to make a positive connection between the chain and drum. As both ends of the handle 46 are open the chains 42 and 48 may be passed through the outer end and joined into a loop in which is inserted a weight 50 to draw the chains taut normally.

The apparatus which applies directly to the cleaning of the window will now be described. As aforesaid, the rack bar 23 and the chain 48 extend upwardly to such apparatus. Near the top of the rack bar one of the faces adjacent the gear teeth 24 carries two rings 51 which serve to rigidly support a round tube 52 in spaced relation alongside the rack bar. The upper ring 51 has two lateral apertured ears 53 in which is pivotally mounted 54 the lower end of two diverging arms 55. Intermediate the ends of these arms are also pivotally mounted 56 two shorter arms 57 which converge upwardly toward two opposed ears 58 at the upper end of a round vertical rod 59, a pivotal connection 60 being also made thereat. The rod 59 is located centrally of the arms aforescribed and descends slidably into the tube 52 taking the upper end of the chain 48. A spring 61 is coiled around the rod 59 between the ears 53 and 58, this spring being normally expansive and tending to force the rod upward.

The outer end of the diverging arms 55 is pivotally connected at 62 to the bottom or intermediate portion of a U-shaped member 63. This member forms the holder of the cleaning-pad frame, which consists of a rectangular plate 64 having two lateral flanges 65 bent at right angles from the plate and in the same direction. Midway between their ends these flanges are apertured to take loosely a pin 66 whose ends are rigidly secured to the extremity of the sides of the U-shaped member 63. Thus the plate is rockably disposed in the latter. The cleaning pad 67 is made of rubber or other resilient material, rectangular in shape and backed by a metal plate 68. The latter has at one edge two hooks 69 which may be engaged with one edge of the frame plate 64 as the pad and the latter are placed back to back. The edges opposite those secured by the hooks 69 are secured by means of a finger 70, which is pivoted 71 on the plate 68 and is adapted to swing onto the plate 64 as shown. The finger 70 has a short lateral bend 72 which serves as a finger hold.

To allow the fastening of a cleaning cloth over the pad 67 aforesaid, the following device is provided: On the pin 66 is mounted by means of two lateral ears 73 an ordinary clenching plate 74 whose lower edge is

pressed against the frame plate 64 by means of a coil spring 75 mounted on the pin 66 between the ears 73. At the end near the hooks 69 a cross pin 75 similar to the pin 66 is rigidly mounted between the lateral flanges 65 of the plate 64. As shown on Fig. 8, a wet or dry cloth 76 may be folded at the middle over the pin 75, then drawn across the pad 67 and secured by the clenching plate 74.

Each U-shaped member 63 may be held in upright position by a prop 77 pivotally connecting it with the corresponding arm 57.

The connection between the lower ring 51 and the rack bar 23 is in the form of a narrow strip 77^a shown dotted in Fig. 6, and the side of the guide tube 22 is split as shown at 78 (Fig. 4) to clear this strip to enable the guide to pass between the rack bar and the tube 52—only as far as the upper ring 51—if it is desired.

The operation of the device is as follows: The actuating apparatus is supported by means of the handle 46 while the clamp 14 is secured to the sash rail 13 so that the rack bar 23 extends on the outside of the window. Now the handle 46 is pressed down. The rack bar 23 and the window cleaning device at the top of it will swing toward the outer sash 11 by virtue of the pivotal connection at 17 and the cleaning pads 67 will press against the window pane of the said sash. If the chains 42 and 48 are now pulled out of the handle by means of the weight 50 the rack bar will rise and if released will fall; thus the outward and inward movement of the chains will give the cleaning apparatus a vertically reciprocatory motion and the cleaning pads will rub the window pane. In connection with a wet and then dry cloth 76 mounted as aforescribed the cleaning process may be carried out as in the ordinary manner. While the chain 48 is being drawn out the drum 36 is turning with the effect of drawing down that section of the chain extending up to the rod 59. Hence the said rod in being drawn downwardly against the tension of the spring 61 serves to spread the arms 55 as shown. As the ratchet disk 38 turns with the drum 36, the dog 40 will slip on same and the arms 55 will thus be locked against return movement. The cleaning pads 67 will be in spaced relation and will be able to clear partition moldings between window panes or other projections thereon. Tension on the chain 42, however, retracts the dog 40 from the ratchet disk 38 and, the upper portion of the chain 48 released, the cleaning pads will close in, as shown dotted in Fig. 6. In this position they are used for cleaning the smaller or unobstructed window panes. It will be observed that whatever the position of the pads the rack bar may be raised or lowered

by actuating the chain 48 or by applying the crank handle to the inner end of the spindle 26 and rotating same in the desired direction.

5 The base plate 15 can be made sufficiently long to allow the rack bar to be spaced farther from the window so that it may clear the sill if it descends in that direction.

If the apparatus is to be used for cleaning the inner side of the window, the clamp 14 may be reversed to bring all the parts within the room. The crank handle is then applied to and operated at the now inner end of the spindle 26. Also a handle 79 fastened at 80 to the guide tube 22 enables the operator to support the actuating apparatus from within.

The device may be applied to either sash, the cleaning pads not being affected by the inclination of the rack bar, on account of their hinged relation to it. To move the device along the window the clamp 14 may be released and re-adjusted at the next position.

25 Suitable guide rollers 81 may be provided within the handle 46 to space the chains 42 and 48.

I claim:

1. A window cleaner comprising a pivoted base member, supporting means for said member, a reciprocatory bar carried by the member, a pair of cleaning devices carried by the reciprocatory bar, pivoted supports for said cleaning devices connected to the reciprocatory bar, means for operating said supports to spread the cleaning devices, and means for operating the reciprocatory bar.

2. A window cleaner comprising a base member, supporting means for said member, a reciprocatory bar carried by the member, a pair of cleaning devices carried by the reciprocatory bar, pivoted supports for said cleaning devices connected to the reciprocatory bar, means for operating said supports to spread the cleaning devices, and means for operating the reciprocatory bar.

3. A window cleaner comprising a base member, supporting means for said member, a reciprocatory bar carried by said member,

a pair of pivoted arms carried by the bar, a slidable rod carried by the bar, pivoted spreader links connecting the rod to the respective arms, cleaning devices carried by the arms, means for operating the reciprocatory bar, and means for operating the slidable rod.

4. A window cleaner comprising a base member, supporting means for said member, a reciprocatory bar carried by the base member, a pair of pivoted arms carried by the bar, an abutment carried by the bar, a slidable rod carried by the bar, said rod having an abutment, a spring interposed between the aforesaid abutments, pivoted spreader links connecting the aforesaid rod to the respective arms, cleaning devices carried by the arms, means for operating the reciprocatory bar, and means for operating the slidable rod.

5. A window cleaner comprising a base member, supporting means for said member, a rack-bar carried by the base member, guides on the base member for the rack-bar, an actuating gear for the rack-bar carried by the base member, a pair of pivoted arms carried by the rack-bar, a slidable rod carried by the rack-bar, pivoted spreader links connecting the rod to the respective arms, and means for operating the slidable rod.

6. A window cleaner comprising a base member, supporting means for said member, a reciprocatory bar carried by the base member, a tube carried by the bar, a rod slidably mounted in the tube, an abutment on the tube, an abutment on the rod, a spring interposed between said abutments, pivoted arms carried by the tube, pivoted spreader links connecting the rod to the respective arms, cleaning devices carried by the arms, means for operating the reciprocatory bar, and means for operating the slidable rod.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES B. RUNGE.

Witnesses:

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OTTO LIEBERS.