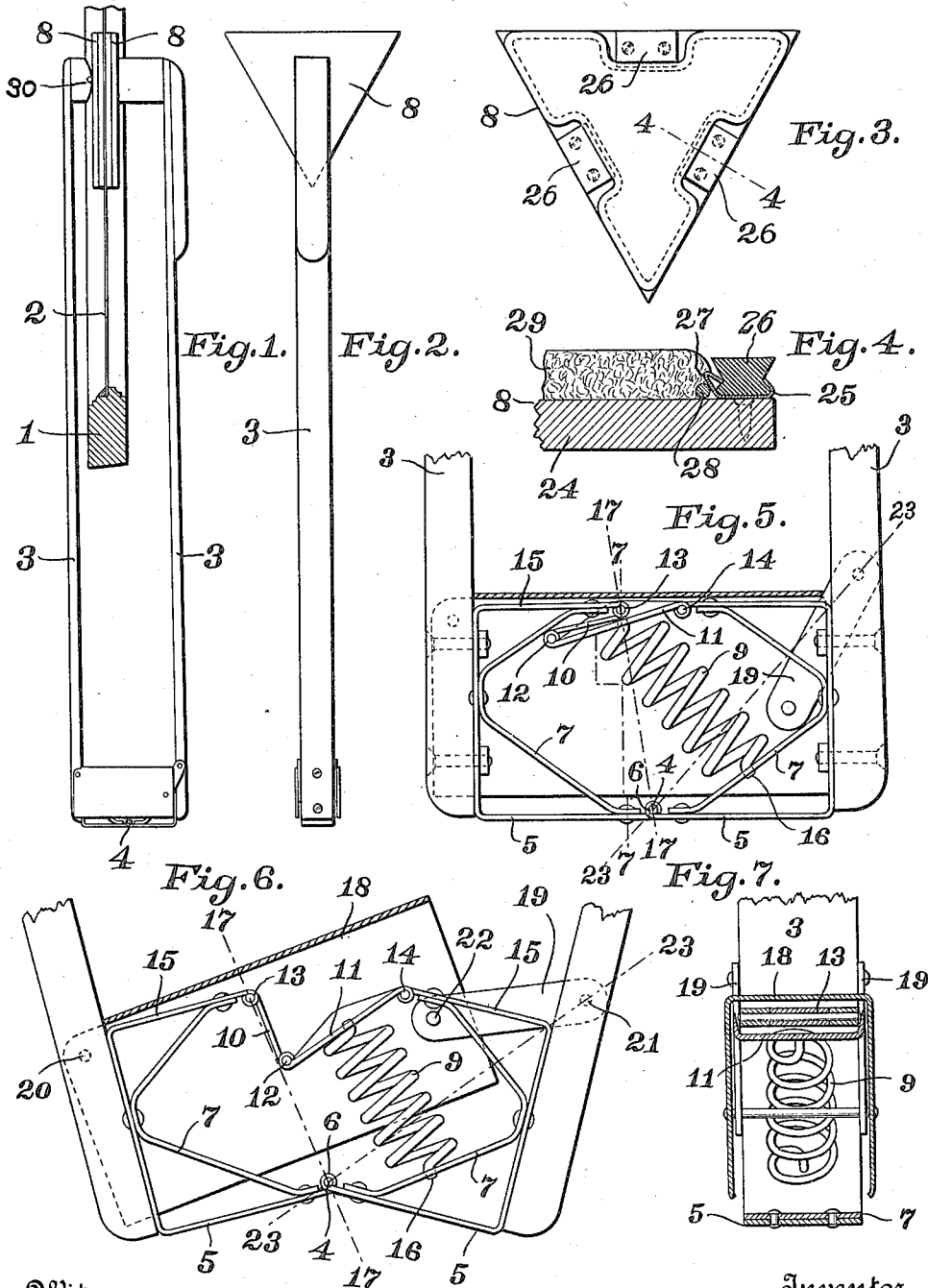


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WINDOW CLEANER.
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To all whom it may concern:

Be it known that I, WILLIAM KAJERDT, a subject of the King of Sweden, residing at New York city, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Window-Cleaners, of which the following is a specification.

My invention relates to window cleaners and is designed to produce a simple and effective device of this class, adapted to operate on both sides of the window at the same time, thus avoiding the necessity and the risk and danger of cleaning windows from outside the building.

The best form of device at present known to me suitable for carrying my invention into effect, is illustrated in the accompanying sheet of drawings, throughout the several views of which like reference characters indicate corresponding parts.

In the drawings: Figure 1 is a view in elevation and partial section showing the device in position ready for use. Fig. 2 is a front elevation of the device. Fig. 3 is a view of one of the cleaning pads and its holder. Fig. 4 is an enlarged detail section, taken on the line 4-4 of Fig. 3. Fig. 5 is an enlarged view of the pivot and toggle connections between the lower ends of the pad-carrying arms, showing the latter locked together or in position for use. Fig. 6 is a similar view showing the arms spread apart, and Fig. 7 is a sectional view on the line 7-7 of Fig. 5.

Referring now to the drawings, 1, represents a portion of a window sash and 2, the glass of the sash. The cleaning device is illustrated in connection with the sash shown in Fig. 1, in position ready for use and comprises two arms 3, 3, having their lower ends hinged together at 4, and suitably spaced apart to straddle either the upper or lower sash of the window. The spacing of the arms is preferably provided for by the form of hinge employed, which, as shown, is of the strap or extension type, the members 5, 5, of which are bolted or otherwise secured to the arms 3, 3, and have right angular projecting portions extending toward each other to the point of meeting centrally of the arms where they are united by a pintle 6, which forms the turning axis for the arms about which they have limited movement. Braces 7, 7, serve to give

added strength and stiffness to the hinge members.

At their upper ends, each of the arms 3, 3, is provided with a cleaning pad 8, the preferred form of which is shown in Figs. 3 and 4, and will be later on described. These pads may be rigidly or movably secured to the arms, as desired, and are held in close relation and firmly pressed against opposite sides of the window glass by a spring 9, co-acting with toggle links 10 and 11, to draw the arms together. A rocking connection for one of the pads 8, is indicated at 30.

The toggle links, hinged together at 12, are pivotally mounted, one at 13, and the other at 14, on braced extensions 15, 15, of the hinges 5, 5, and the spring 9, seated and secured at 16, on one of the braces 7, acts expansively against the toggle link 11, to yieldingly maintain the hinged connection 12, between the links to the right or left of the line of centers, indicated at 17, 17, depending upon the position of the arms 3, 3; the connection 12, being to the left of the line 17, 17, when the arms are drawn together, as in Figs. 1 and 5, to bring the pads into relation for use, and to the right of the line, when the arms are spread apart, as in Fig. 6, to place the device in position on the window sash or remove it therefrom.

In order to limit the spread of the arms and at the same time provide convenient means for operating the toggle link system when adjusting the device for use, a second set of toggle links 18, and 19, is employed. The link 18, is pivoted to one of the arms 3, at 20, and the link 19, is pivoted to the other arm 3, at 21, the connection between the links being indicated at 22.

As shown, the member 18, while in effect a link, is preferably given inverted U-shape in cross section throughout the greater portion of its length and, thus formed, serves as a protecting cover for the toggle link system and hinge connecting the arms. The connection 22, moves to the left as the arms 3, 3, are spread apart and comes to rest in line with the pivotal centers 20 and 21, in which position, the toggle links 18 and 19, are fully extended, and act to limit further spreading movement of the free ends of the arms 3, 3. This brings the connecting pivot 12 of the first set of toggle links 10, 11, to the right of line 17, 17, so that the expansive force of spring 9, tends to open the hinged

joint and hold the arms 3, 3, as far apart as the second set of links 18, 19, will permit. The closing together of arms 3, 3, is also positively prevented while in this position

5 by the locking action of the knee-joint produced by the connecting pivot 22 of links 18, 19, being on, or slightly above, the line of centers 20, 21. With the cleaning device thus adjusted, and placed in position straddling a window sash, the arms 3, 3, can be

10 closed or drawn together by forcing the device upward against the bottom of the sash or pulling the sash down upon it. In either case, the effect would be to exert pressure on the toggle member 18, and shift the center

15 22, to the right of the line 23, 23. This motion tending to draw the arms 3, 3, together, would result in causing the center 12, of the other toggle joint to move from the right to the left side of the line 17, 17, permitting

20 full movement of the arms 3, 3, toward each other, under the action of the spring, until limited by the cleaning pads coming into close contact with the window glass.

25 While any suitable pad may be used in connection with the above described device, I preferably employ the form shown in detail in Figs. 3 and 4, which comprises a base

30 24, of wood or other material adapted to be secured either rigidly or movably to each of the arms 3, 3. The base board, triangular in outline is provided centrally of each side thereof with a spring clip 25, suitable for

35 receiving and gripping a block of hard rubber 26, the upper surface of which is flattened, as shown. Conforming in outline to the base board and shaped in at each side for engagement with the inner lip 27, of each of the clips thereon, there is a wire

40 frame 28, to which the cleaning pad 29, is suitably secured, said wire frame serving as a metal reinforcement for the pad. Various materials may be employed for the pad but I prefer a soft springy felt of normal thick-

45 ness somewhat greater than that of the rubber blocks 26 which latter serve to limit compression of the pad and prevent its becoming hard packed against the base board and unfit for effective use when water or

50 other liquid is employed. Constructed as above described, the placing of the pads in operative position on the base boards is quickly effected by springing the shaped-in

55 sides of the wire frames thereof under the clips on the board, from which they may be as readily disengaged for removal, whenever desired.

As the method of use will be apparent from the foregoing, I shall describe the same

60 very briefly. As previously explained, the device is designed to straddle the window sash in order to bring the cleaning pads into operative relation with opposite sides of the glass, and the first step is, therefore, to

65 spread the arms 3, 3, which may be done by

taking one in each hand and forcing them apart, the spring 9, yielding to the pressure exerted and permitting the centers 12, and 22, of the toggles, to shift to the opposite

70 side of the lines 17, and 23, when the force of the spring again becomes effective to yieldingly lock the two toggle link systems in position to hold the arms spread apart. With the device thus adjusted, it is placed

75 with one pad-carrying arm inside and the other outside of the window sash and then moved upward to bring the toggle member 18, against the bottom of the sash, in which

80 position, continued upward pressure will cause this toggle member to yield sufficiently to shift both sets of links, as above described, permitting the spring to co-act and draw the arms together, until the cleaning

85 pads carried thereby are in close contact with the glass. The device being now ready for use, is suitably manipulated to move the cleaning pads about over both surfaces of the glass. This is readily done by holding

90 the device at or near its lower end in one hand and grasping the enlarged upper portion of the pad-carrying arm with the other hand. On completing the cleaning of the

95 glass, the device is removed by spreading the arms, as above described.

Among the important advantages of the invention may be mentioned its simple and

100 inexpensive construction, the readiness and ease with which it may be operated and its efficiency in use. The triangular shape of the pads permits them to be forced into the farthest recesses of the corners or other

105 irregularities of the window frame.

Having described my invention, I claim:

1. In a window cleaning device, the combination of a plurality of pad-carrying arms

110 and a spring arranged to yieldingly maintain the arms in either of two positions, the arms being operative in one of said positions and inoperative in the other.

2. In a window cleaning device, the combination of two arms connected together at

115 one end and relatively movable pads carried by the other ends of the arms, and a spring controlled toggle link connection between the arms, intermediate of the ends, adapted to either force the pads apart or

120 toward one another.

3. In a window cleaning device, the combination of a plurality of pad-carrying

125 arms, a spring toggle link connection between the arms, and means for limiting the outward movement of the arms.

4. In a window cleaning device, the combination of two arms connected together at

130 one end and relatively movable pads carried by the other ends of the arms, and a spring controlled toggle link connection between the arms, intermediate of the ends, adapted to either force the pads apart or toward one

135 another, together with collapsible tension

apparatus limiting the maximum extent of separation of the pads.

5 5. In a window cleaning device, the combination of two arms connected together at one end and relatively movable pads carried by the other ends of the arms, and a spring controlled toggle link connection between the arms, intermediate of the ends, adapted to either force the pads apart or
10 toward one another, together with collapsible tension apparatus limiting the maximum extent of separation of the pads comprising a pair of loosely pivoted links, one of which is shaped to form a casing for the
15 spring controlled connections.

20 6. In a window cleaning device, the combination of two arms connected together at one end and relatively movable pads carried by the other ends of the arms, and a spring controlled toggle link connection between the arms, intermediate of the ends, adapted to either force the pads apart or toward one another, together with collapsible tension apparatus limiting the maximum extent of separation of the pads comprising a pair of loosely pivoted links, one of which is shaped to form a casing for all the connections between the arms.

25 7. In a window cleaning device, the combination of two arms connected together at one end and relatively movable pads carried by the other ends of the arms, and a

spring controlled toggle link connection between the arms, intermediate of the ends, adapted to either force the pads apart or toward one another, and means for limiting the separation of the arms and preventing the complete extension of the toggle link connection. 35

8. In a window cleaning device, the combination of a plurality of arms each provided with a pad-holder, pads removably secured in the holder, and cooperating means for limiting compression of the pads against the holders. 40

9. In a window cleaning device, the combination of a plurality of arms each provided with pad-holding clips, pads having a surrounding frame of metal for engagement with the clips, and means carried by the clips for limiting compression of the pads. 45

10. In a window cleaning device, the combination of two arms and oppositely disposed pads mounted on said arms, a hinged connection between the arms and a casing connected to said arms cooperating therewith to inclose said hinged connection, without interfering with the normal operation thereof. 50

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."