Aug. 29, 1933. C. GEHRIG 1,924,922

WINDOW CLEANING APPARATUS

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Fig. 1

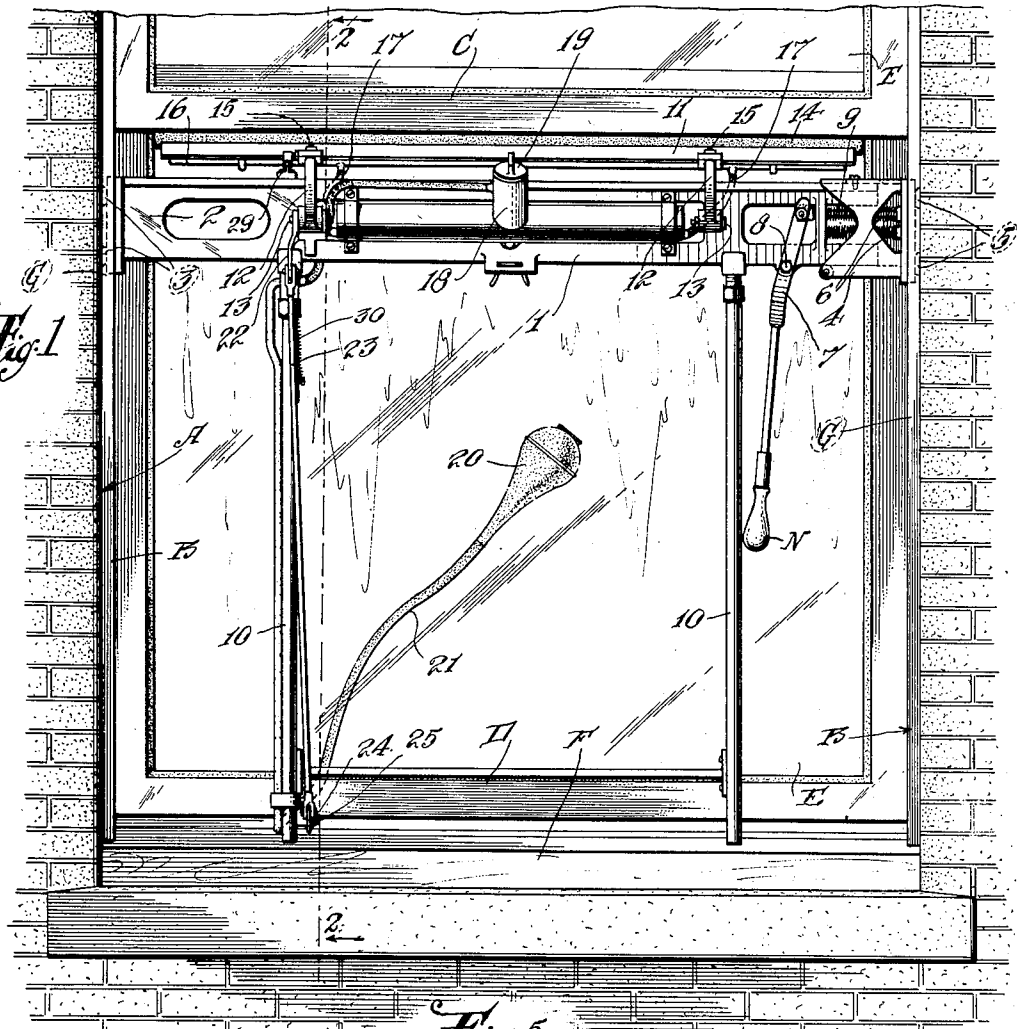


Fig. 5

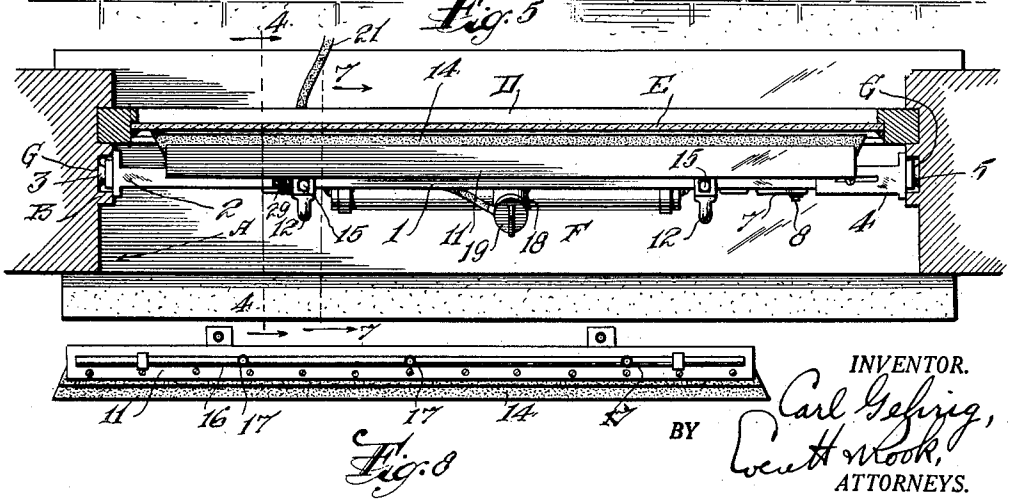


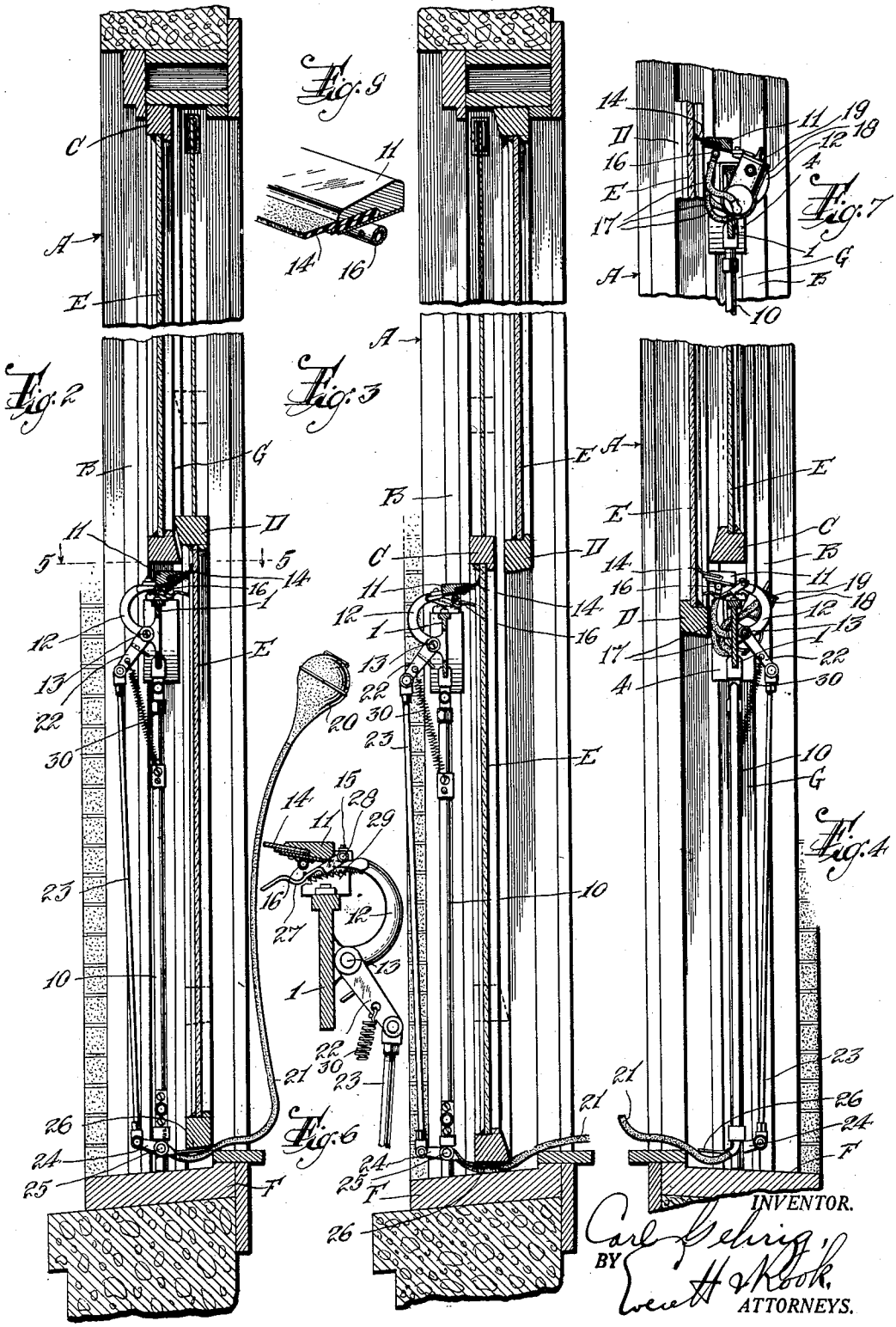
Fig. 8

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WINDOW CLEANING APPARATUS

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7 Claims. (Cl. 15—250)

This invention relates in general to window cleaning apparatus and more particularly to that type of window cleaner in which a wiper is mounted on the frame of a window at one side of a sash so as to have a wiping contact with the glass of the sash when the sash is raised and lowered.

One object of the invention is to provide a window cleaning apparatus of this character which shall include a frame having means for removably mounting it in a window frame so that the apparatus can be used for cleaning both the upper and lower sashes and both sides thereof.

Other objects are to provide a window cleaning apparatus which shall include a frame to be mounted in a window frame at one side of the sash and which shall have a wiper movably mounted on the frame so as to move into and out of contact with the glass of said sash, in combination with means operated by the sash at the limits of its movement for actuating the wiper into and out of wiping contact with the glass; to provide a window cleaner of the character described that shall have a liquid fountain on the frame, a spray head on the wiper, and means for ejecting the liquid from the fountain through the spray head upon the glass, and to obtain other advantages and results as will be brought out by the following description.

Referring to the accompanying drawings in which corresponding and like parts are designated by the same reference characters throughout the several views,

Figure 1 is an elevation of a window cleaning apparatus embodying my invention showing it applied to a window and viewed from the outside.

Figure 2 is a transverse vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 2 showing the window cleaning apparatus in use for cleaning the outside of the upper sash instead of the lower sash as shown in Figure 2.

Figure 4 is a similar view taken on the line 4—4 of Figure 5.

Figure 5 is a horizontal sectional view on the line 5—5 of Figure 2.

Figure 6 is an enlarged fragmentary sectional view through the window cleaning apparatus detached from a window and with portions thereof removed.

Figure 7 is a fragmentary transverse vertical sectional view on the line 7—7 of Figure 5.

Figure 8 is a bottom plan view of the wiper, and,

Figure 9 is a fragmentary sectional perspective view of the wiper.

Specifically describing the illustrated embodiment of the invention, I have shown it in connection with a window of known construction including a frame or casing A in the sides B of which are slidable upper and lower sashes C and D respectively, said sashes having the usual glass panes E.

The apparatus includes a frame 1 having one end 2 provided with lugs 3 to frictionally engage one side of the window frame. Upon the other end of the frame 1 is slidably mounted a clamping head 4 having lugs 5 to frictionally grip the other side of the window frame. This clamping head is normally actuated longitudinally outwardly on the main frame by compression springs 6, and is actuated inwardly upon the frame by a lever 7 pivoted at 8 on the frame and connected to one end of a pull-rod 9, the other end of which is secured to the clamping head. Preferably the frame also includes standards 10 which may serve to support the frame on the window-sill F and also facilitate in handling the frame. Normally the length of the frame between the lugs 3 and the lugs 5 on the clamping head when the clamping head is in its outmost position is greater than the distance between the sides of the window frame, and to insert the frame in a window, the lever 7 is grasped in one hand while one of the standards is grasped in the other hand, the handle N of the lever being swung outwardly so as to pull the clamping head inwardly on the frame. The lugs 3 and 5 are then brought into contact with the respective sides of the window frame, after which the lever 7 is released and the springs 6 securely hold the frame in position. Preferably the lugs 3 and 5 are set into the guide grooves G provided in the frame for the sashes, and when the apparatus is to be used for cleaning the outside of the lower sash the frame 1 is set in the grooves of the upper sash.

Obviously the apparatus may be used for cleaning both the outside and the inside of both sashes.

Upon the frame 1 is mounted a wiper 11, and preferably the wiper is mounted to move toward and from the glass of the sash as by means of arms 12 pivotally connected at 13 on horizontal axes upon one side of the frame. The wiper includes a strip of rubber or the like 14, and is preferably adjustable upon the arms 12 as by bolts 15 to compensate for wear of the

rubber and to vary the pressure of the rubber against the glass.

On the underside of the wiper is mounted a spray head shown in the form of a perforated pipe 16, and this spray head is connected by flexible tubes 17 to a fountain 18 secured on the frame to contain a suitable cleaning fluid such as water or alcohol. The container or fountain 18 has a filling opening 19 and the liquid is ejected from the fountain by a collapsible bulb or the like 20 connected by a tube 21 to the fountain. By squeezing the bulb 20, pressure is exerted on the liquid in the fountain so that some of the liquid is squirted through the spray head.

Another feature of the invention is the automatic moving of the wiper into and out of contact with the glass of the sash being cleaned. For accomplishing this result one arm 12 is provided with an extension 22 connected by a link 23 to one end of a lever 24 pivotally mounted intermediate its ends at 25 on one of the standards 10. The other end 26 of the lever projects laterally from the standard so as to be engaged by the underside of the lower rail of the sash, so that as the sash descends into contact with the lever, at its lower limit of movement the wiper is actuated toward the glass of the sash. The wiper is held in such position by a pawl lever 27 pivotally mounted at 28 on the wiper and engaging a segmental ratchet 29 on the frame 1, as most clearly shown in Figure 6 of the drawing. The lever 27 projects into the path of the lower rail of the sash so as to be lifted by engagement with the upper side of the lower rail of the sash at the upper limit of movement of the latter, to permit the wiper to move away from the glass. The wiper may be so mounted as to move by gravitational action away from the glass, but preferably a spring 30 is provided to accelerate the movement.

In use of the apparatus and assuming it is desired to clean the outer side of the lower sash of the window, the apparatus is mounted as shown in Figure 2 of the drawings, where the lower sash has been moved to its lower limit of movement so as to actuate the wiper into contact with the glass. With the sash in this position, the liquid is ejected from the fountain upon the glass by squeezing the bulb 20, after which the sash is raised as shown in Figure 4 of the drawings until the lower rail of the sash engages the pawl lever 27 to release the wiper so that it may move away from the sash. During the raising of the sash, the wiper is caused to wipe the liquid and dirt from the glass downwardly to the lower rail of the sash. If the glass is not clean by this one operation, the sash may be again lowered and the operation repeated, with or without liquid.

For cleaning the outside of the upper sash, the apparatus is located as shown in Figure 3 of the drawings with the upper sash brought to the lower part of the window frame and the upper sash moved to the upper part of the frame. The glass is cleaned in exactly the same manner as described in connection with the lower sash.

Similarly the insides of the glasses of the two sashes may be cleaned by mounting the apparatus on the window frame at the inside of the sashes instead of at the outside.

It will be understood by those skilled in the art that the frames 1 and wipers will be made of different sizes for use in windows of different sizes, and that where the sash includes several panes separated by mullions, the wiper strip 15 will be provided with notches to provide a clearance for the mullions.

While I have shown and described my invention as embodied in certain details of construction it should be understood that this is primarily for illustrating the principles of the invention and that many modifications and changes may be made in the details of construction without departing from the spirit or scope of the invention.

Having thus described my invention, what I claim is:

1. Cleaning apparatus for a window having a casing and a sliding sash having upper and lower rails, said apparatus comprising a frame, means thereon for mounting the frame in a window casing at one side of a sash, a wiper mounted on said frame so as to be located adjacent the lower limit of movement of the upper rail of the sash when said frame is mounted in a window frame and to move into and out of contact with the glass of said sash so that as the sash is moved upwardly said wiper will wipe the glass, and means operatively connected to said wiper and having a part located to be adjacent the lower limit of movement of the lower rail of the sash when said frame is mounted in a window frame and to be actuated by said lower rail as said rail reaches the lower limit of its movement to move said wiper into contact with said glass adjacent the upper rail of said sash.

2. Cleaning apparatus for a window having a casing and a sliding sash having upper and lower rails, said apparatus comprising a frame, means thereon for mounting the frame in a window casing at one side of a sash, a wiper mounted on said frame so as to be located adjacent the lower limit of movement of the upper rail of the sash when said frame is mounted in a window frame and to move into and out of contact with the glass of said sash so that as the sash is moved upwardly said wiper will wipe the glass, and means operatively connected to said wiper for releasably holding said wiper in contact with the glass during movement of the sash in said direction and having a part located to be adjacent the upper limit of movement of the lower rail of said sash when said frame is mounted in a window frame and to be actuated by said lower rail as said rail reaches the upper limit of its movement to release said wiper for movement out of contact with said glass adjacent said lower rail.

3. Cleaning apparatus for a window having a casing and a sliding sash having upper and lower rails, said apparatus comprising a frame, means thereon for mounting the frame in a window casing at one side of a sash, a wiper mounted on said frame so as to be located adjacent one limit of movement of one rail of said sash when said frame is mounted in a window frame and to move into and out of contact with the glass of said sash so that as the sash is moved in one direction said wiper will wipe the glass, and means operatively connected to said wiper and having a part located to be adjacent one limit of movement of the other rail of the sash when said frame is mounted in a window frame and to be actuated by said other rail as it reaches said limit of its movement to move said wiper into contact with said glass.

4. Cleaning apparatus for a window having a casing and a sliding sash having upper and lower rails said apparatus comprising a frame, means thereon for mounting the frame in a window

casing at one side of a sash, a wiper mounted on said frame to move into and out of contact with the glass of said sash so that as the sash is moved in one direction said wiper will wipe the glass, means operatively connected to said wiper and having a part located to be adjacent one limit of movement of one rail of said sash when said frame is mounted in a window frame and to be actuated by said rail as said rail reaches one limit of its movement to move said wiper into contact with said glass, and means operatively connected to said wiper and having a part located to be adjacent the other limit of movement of said rail when said frame is mounted in the window frame and to be actuated by said rail at said other limit of its movement to move said wiper out of contact with said glass.

5. A window cleaning apparatus comprising a frame, means thereon for mounting the frame in a window frame at one side of a sash, a wiper pivotally mounted on a horizontal axis on said frame to contact with the glass of said sash as the sash is moved in one direction, means including a lever on said frame adjacent one end thereof to be actuated by the sash at one limit of its movement, and an operative connection between said lever and said wiper for moving said wiper toward said glass, means for holding said wiper in such position, and means operatively connected with the holding means and having a part located at the other end of said frame to be operated by the sash at its other limit of movement for releasing the holding means to permit said wiper to move away from said glass.

6. The window cleaning apparatus set forth in claim 5 with the addition of means for actuating said wiper away from the glass of said sash.

7. A window cleaning apparatus comprising a frame, means thereon for mounting the frame in a window frame at one side of a sash, a wiper pivotally mounted on a horizontal axis on said frame adjacent the upper end thereof to contact with the glass of said sash as the sash is moved in one direction, means including a lever on said frame adjacent the lower end thereof to be actuated by the sash at the lower limit of its movement and an operative connection between said lever and said wiper for moving said wiper toward said glass, a ratchet on said frame adjacent the upper end thereof, and a pawl lever on said wiper to engage said ratchet for holding said wiper in contact with the glass, said pawl lever to be engaged by the sash at the limit of its upper movement to disengage said pawl lever from said ratchet and permit said wiper to move out of contact with the glass.

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