No. 860,021. PATENTED JULY 16, 1907.

H. FESENFELD.

CAR WINDOW CLEANER.

APPLICATION FILED APR. 16, 1906.

2 SHEETS—SHEET 1.

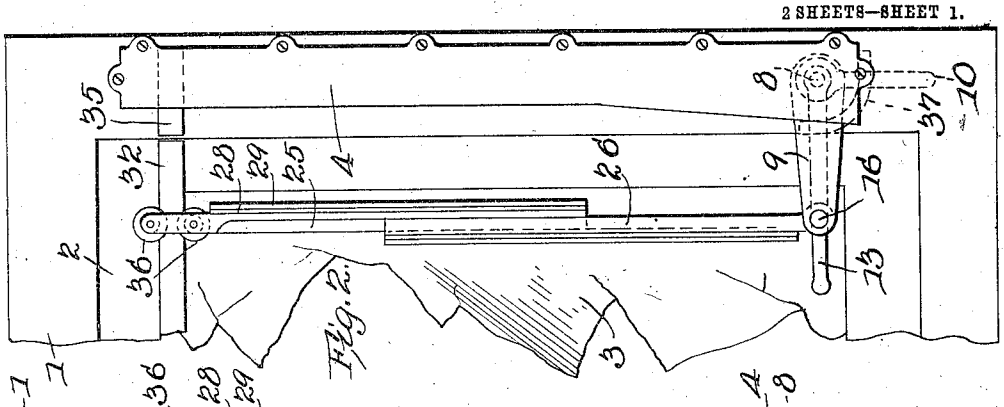


Fig. 2.

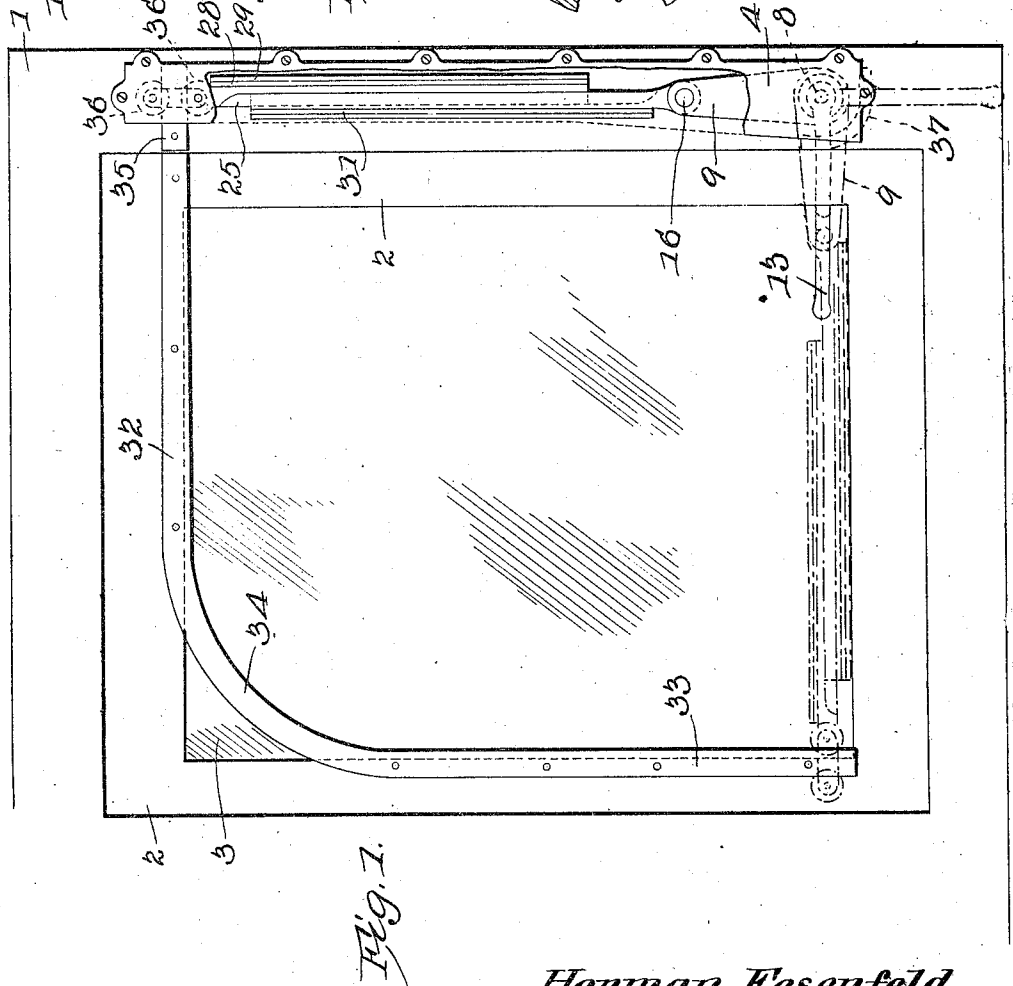


Fig. 1.

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2 SHEETS—SHEET 2

Fig. 6.

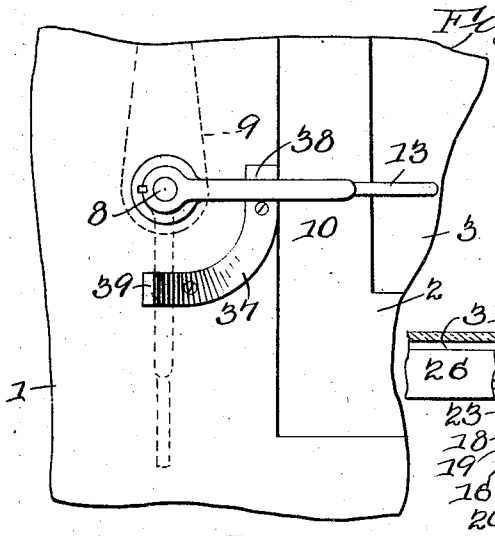
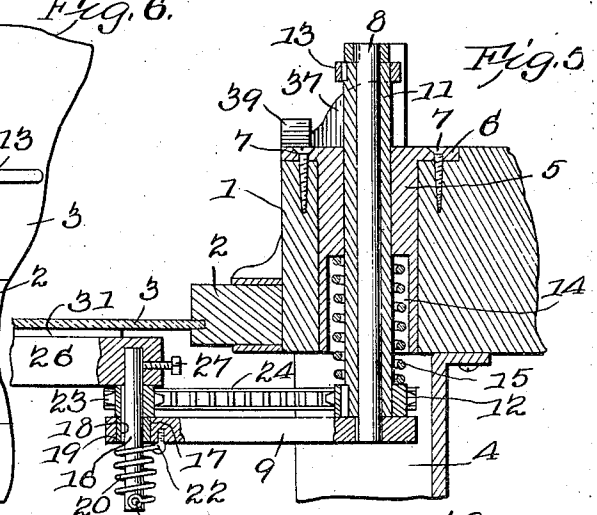


Fig. 5



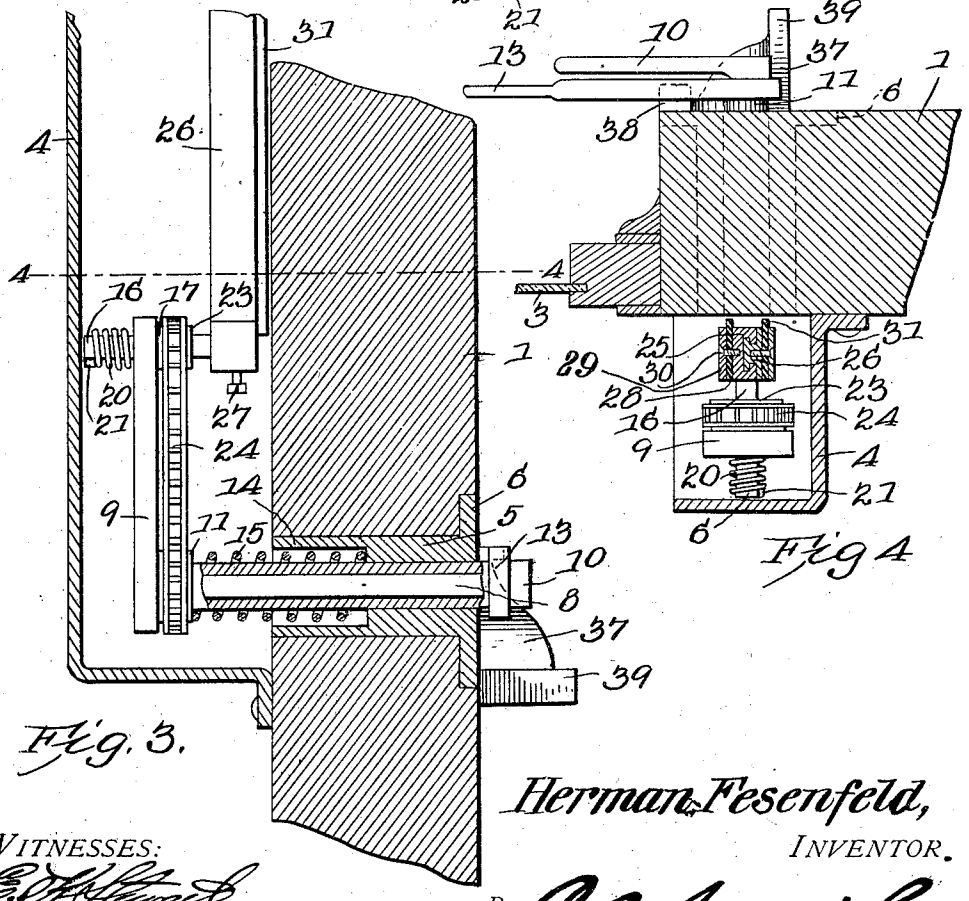


Fig. 3.

Fig 4

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CAR-WINDOW CLEANER.

No. 860,021. Specification of Letters Patent. Patented July 16, 1907.

Application filed April 16, 1906. Serial No. 311,965.

To all whom it may concern:

Be it known that I, HERMAN FESENFELD, a citizen of the United States, residing at Hoquiam, in the county of Chehalis and State of Washington, have invented a new and useful Car-Window Cleaner, of which the following is a specification.

This invention relates to window cleaners, and has for its object to particularly adapt the same for removing frost, rain water and the like, from the window of a motor car which is in front of the motorman.

It is an important object of the present invention to mount the cleaning apparatus in such a relation as to permit of the window being opened without interfering with the cleaning apparatus, and at the same time to enable the convenient manipulation of the apparatus for bringing the same into operative relation with the glass of the window so as to effectually insure the proper cleaning of the glass in a very simple and expeditious manner.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described, shown in the accompanying drawings and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size and minor details may be made, within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings: Figure 1 is an outside view of a window having the cleaning apparatus of the present invention applied thereto, the sheath being broken away to show the apparatus in its normal inoperative position. Fig. 2 is a similar view showing the apparatus moved out of the sheath preparatory to working the same upon the window. Fig. 3 is an enlarged fragmentary sectional view taken vertically through the controlling means of the apparatus with the latter in its inoperative position. Fig. 4 is a cross sectional view on the line 4—4 of Fig. 3. Fig. 5 is a horizontal sectional view showing the apparatus in its operative condition with the wiper at the bottom of the window. Fig. 6 is a fragmentary elevation looking from the interior of the car and showing the relation of the handles.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

For the purpose of illustrating the application and operation of the present invention, there have been included in the accompanying drawings, a portion 1 of a window frame, in which works a conventional form of window sash 2 having a pane of glass 3.

The cleaning elements of the present invention are mounted upon the exterior of the car, and the controlling handles are within the car in convenient reach of the motorman.

For housing the cleaning elements of the device, a metallic sheath or housing 4 is mounted in an upright position upon the exterior of the car at one side of the window sash so as not to interfere with the opening and closing of the latter. This sheath or housing is closed throughout all sides except that side which is directly towards the window sash, and will be referred to as the inner open side of the housing. Adjacent the lower edge of the window glass, the frame is pierced by a bushing 5 which is provided at its inner end with an attaching plate 6 pierced by fastenings 7 to rigidly hold the bushing in position. Extending longitudinally through the bushing is an endwise movable rock bar 8 which projects a suitable distance beyond each end of the bushing and is provided upon its outer end with a crank arm 9, and upon its inner extremity with a crank handle 10. Loosely embracing the rock bar is a sleeve 11 which is provided upon its outer end with a sprocket 12 fixed upon the sleeve, and upon its inner end with a crank handle 13 which is somewhat longer than the crank handle 10. The outer end portion of the bushing is internally enlarged to form a socket 14 in which is a helical spring 15 embracing the sleeve and bearing at one end against the back of the socket, and at its other end against the sprocket 12, whereby the rock bar and the sleeve are normally maintained at their outer limits and are capable of being moved inwardly against the tension of the spring 15.

The outer end of the arm 9 is pierced by a rotatable and endwise movable stub shaft 16 which is mounted in a rotatable bushing 17 in an opening in the arm, and is provided with a longitudinal key 18 working in a guideway 19 in the bushing, whereby the bushing and the stub shaft rotate together, while the stub shaft is capable of sliding endwise through the bushing. A helical spring 20 embraces the outer portion of the stub shaft and has its outer end connected to the shaft, as at 21, and its inner end connected to the arm 9, as at 22, for the purpose of yieldably resisting the rotation of the shaft and to yieldably maintain the latter at its outer limit. A sprocket 23 is mounted upon an intermediate portion of the shaft at the inner side of the arm 9 and is keyed thereon by the key 18. The sprockets 12 and 23 are connected by an endless sprocket chain 24, whereby rotary movement is transferred from the sleeve 11 to the shaft 16.

The wiper is carried by the inner end of the stub shaft 16 and includes telescoped or slidably connected bar members 25 and 26, the inner end of the member 26 being pierced by the stub shaft and held thereon by a set screw 27. The members 25 and 26 have a tongue and groove slidable connection, as shown in Fig. 4, the cross sectional shape of which may be dovetailed, T-shaped or of other suitable shape to prevent lateral separation of the members. A rubber, leather or other flexible strip 28 is applied in any suitable manner to the member 25 and held in place by means

of a face plate 29 applied to the outer face of the strip and secured to the member 25 by suitable fastenings, one of which has been shown at 30 in Fig. 4 of the drawings. A similar strip 31 is secured to the member 26 in the same manner as described for the strip 28. The strips 28 and 31 project at the inner edges of the wiper members in order that they may wipe across the window glass and be brought into operative relation thereto. For the purpose of guiding the wiper when it is being moved across the window glass, a track is secured to the window sash, said track consisting of an upper substantially horizontal portion 32, an upright portion 33 at that side of the sash which is opposite the housing 4, and an arcuate portion 34 connecting the members 32 and 33. This portion of the track is carried solely by the window sash, and there is another track section 35 secured to the frame 1 in alinement with the upper track portion 33 and separate therefrom, in order that the window may be opened and closed without interference by the track. The outer end of the wiper member 26 is provided with a pair of spaced rollers 36 which embrace opposite edges of the track and therefore follow the direction of the latter, the track portion 35 being normally embraced by the rollers so as to direct the latter to the track 32 when the cleaning apparatus is moved out of the housing 4.

The means for controlling the apparatus include the handles 10 and 13 hereinbefore described, and a cam 37 which is disposed concentrically with respect to the rock bar 8 and has its active edge inclined downwardly from a horizontal shoulder 38 at the top of the cam to a horizontal shoulder 39 at the bottom of the cam.

In practice, the apparatus being in an upright position at one side of the window sash, as shown in full lines in Figs. 1, 3 and 4 of the drawings, and the handles in a horizontal position, as best illustrated in Fig. 6, the handle 10 which will be called the offset handle is moved downwardly, whereby the handle wipes across the cam 37 and draws the rock bar 11 together with the arm 9 and the sleeve 11 inwardly against the tension of the spring 15. The handle 10 is given a quarter rotation until it strikes the lower shoulder 39 of the cam, and during this movement, the arm 9 is swung from its upright position in Fig. 1, to a horizontal position shown in Fig. 2, the wiper being moved out of the housing 4 and on to the track 32, the members of the wiper of course being automatically extended to accommodate for the increased distance between the free end of the arm 9 and the track 32.

As all of the movable parts of the wiper are drawn inwardly by reason of the handle 10 wiping across the cam 37, the wiper is of course moved inwardly to have its flexible strips 28 and 31 brought into direct contact with the window glass.

After swinging the handle 10 downwardly, the other handle, which will be termed the wiping handle, is then swung downwardly so as to rotate the sleeve 11 and thereby rotate the stub shaft 16 through the medium of the sprocket chain 24, whereby the wiper will be swung downwardly from the outer end of the arm 9 as a center, whereby the wiper will clean any accumulations of frost, rain water and the like, from the window glass. The guide rollers 36 of course follow the track 32 and thereby telescope the wiper members so as to lengthen and shorten the wiping device according to the requirements of its changing positions when wiping downwardly across the window.

Upon releasing the handle 13, the tension of the spring 15 will move the rock bar 8 and the sleeve 11 outwardly, and thereby move the wiping members away from the window glass, while at the same time the crank handles will wipe over the cam 37 and thereby rotate the rock bar 8 and the sleeve 11. The backward rotation of the rock bar 8 swings the bar 9 upwardly and back into the sheath or housing 4, while the rotation of the sleeve 11 will rotate the stub shaft 16 through the medium of the chain 24 and thereby swing the cleaning members back into the housing.

From the foregoing description, it will be noted, that, with the exception of the track, all of the parts of the present device are mounted independently of the window in order that the latter may be opened and closed without interference by the cleaning apparatus. Moreover, the cleaning apparatus is housed and out of the way when not in use, and when being operated, it is first moved from a position at one side of the window into a position in engagement with the window glass, after which the cleaning element is swung down so as to scrape across the glass and thereby remove frost and the like therefrom in a very simple and expeditious manner.

Having thus described the invention, what is claimed is:

1. The combination with a window frame having a track portion thereon and a window sash having a track adjacent the edges thereof, said track adapted to register with the track portion of the window frame; of an extensible window cleaner pivotally mounted independently of the sash, means carried by the cleaner for riding upon the rails of the frame and sash, and means for actuating the cleaner.

2. The combination with a window frame having a track portion thereon and a window sash having a track adjacent the edges thereof, said track adapted to register with the track portion of the window frame; of an extensible window cleaner pivotally mounted independently of the sash, means carried by the cleaner for riding upon the rails of the frame and sash, means for actuating the cleaner, and means for automatically returning the cleaner to its initial position.

3. A window cleaner mounted independently of a window sash, means including a cam and a crank handle cooperating with the cam to move the cleaner into engagement with a window glass, and other means including a handle for moving the cleaner across the glass.

4. A window cleaner mounted independently of a window sash, an endwise movable rock bar having a crank handle at one end and a crank arm at the other end, the cleaner being pivotally carried by the crank arm, a cam adapted to coöperate with the crank handle to move the bar inwardly and bring the cleaner into engagement with a window glass when the bar is rocked by the handle, and means for swinging the cleaner upon its pivotal connection with the arm and across the window glass.

5. A window cleaner mounted independently of a window sash, an endwise movable rock bar having a crank handle and a crank arm, the cleaner being pivotally carried by the arm, a cam adapted to coöperate with the crank handle to move the rock bar endwise and bring the cleaner into engagement with a window glass when the bar is rocked, a sleeve rotatably embracing the rock bar, means for rotating the sleeve, and a connection between the sleeve and the cleaner for swinging the latter upon the arm and across the window glass.

6. A window cleaner mounted independently of the window sash, an endwise movable rock bar provided with a

crank handle and a crank arm, the cleaner being pivotally mounted upon the crank arm, a cam adapted to coöperate with the crank handle for moving the rock bar endwise to bring the cleaner into engagement with a window glass when the bar is rocked, a rotatable sleeve mounted upon the bar and provided with a crank handle, sprockets carried by the sleeve and the pivotal connection between the cleaner and the crank arm, and an endless sprocket chain connecting the sprockets.

7. A window cleaner mounted independently of a window sash, an endwise movable rock bar having a crank handle and a crank arm, the cleaner being pivotally mounted upon the arm, a cam adapted to coöperate with the crank handle to move the bar endwise and bring the cleaner into engagement with a window glass when the bar is rocked, a spring to yieldably maintain the rock bar at the normal limit of its endwise movement, and means to swing the cleaner upon its pivotal connection with the arm when said cleaner is in engagement with a window glass.

8. A window cleaner mounted independently of a window sash, an endwise movable rock bar provided with a crank arm and a crank handle, the cleaner being pivotally mounted upon the arm, a cam adapted to coöperate with the crank handle to move the bar endwise and bring the cleaner into engagement with a window glass when the bar is rocked, a sleeve rotatable upon the rock bar, a crank handle for the sleeve, a helical spring embracing the sleeve and operating to yieldably maintain the rock bar at the normal limit of its endwise movement, and a drive connection between the sleeve and the pivotal connection between the arm and the cleaner to swing the latter across the window glass when the sleeve is rotated.

9. In a window cleaner, the combination of a bushing, an endwise movable and rotatable sleeve extending through the bushing and projecting at opposite ends thereof, a sprocket upon one end of the sleeve and a crank handle upon the other end thereof, an endwise movable rock bar journaled in the sleeve and projecting at opposite ends thereof, a crank arm carried by one end of the rock bar, and a crank handle carried by the other end thereof, a cam over which the crank handle of the rock bar works to move the bar in an endwise direction, a helical spring embracing the sleeve and bearing in opposite directions against the shoulder of the bushing and sprocket to yieldably maintain the rock bar and the sleeve at one limit of their endwise movement, a window cleaner pivotally carried by the crank arm, a sprocket upon the pivotal connection between the arm and the cleaner, and a sprocket chain connecting the sprockets.

10. A window cleaner comprising a crank arm mounted independently of a window sash, a telescopic cleaner pivotally carried by the arm, means to swing the arm across the window sash to bring the cleaner into engagement with the glass, a window sash track, the cleaner having a guide for engagement with the track, and means to swing the cleaner upon its pivotal connection with the crank arm to wipe the cleaner across the glass.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HERMAN FESENFELD.

Witnesses:
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C. W. Hodgdon.