No. 857,263. PATENTED JUNE 18, 1907.

H. E. WALTER.

WINDOW CLEANING DEVICE.

APPLICATION FILED MAY 16, 1906.

4 SHEETS—SHEET 1.

Fig. 1.

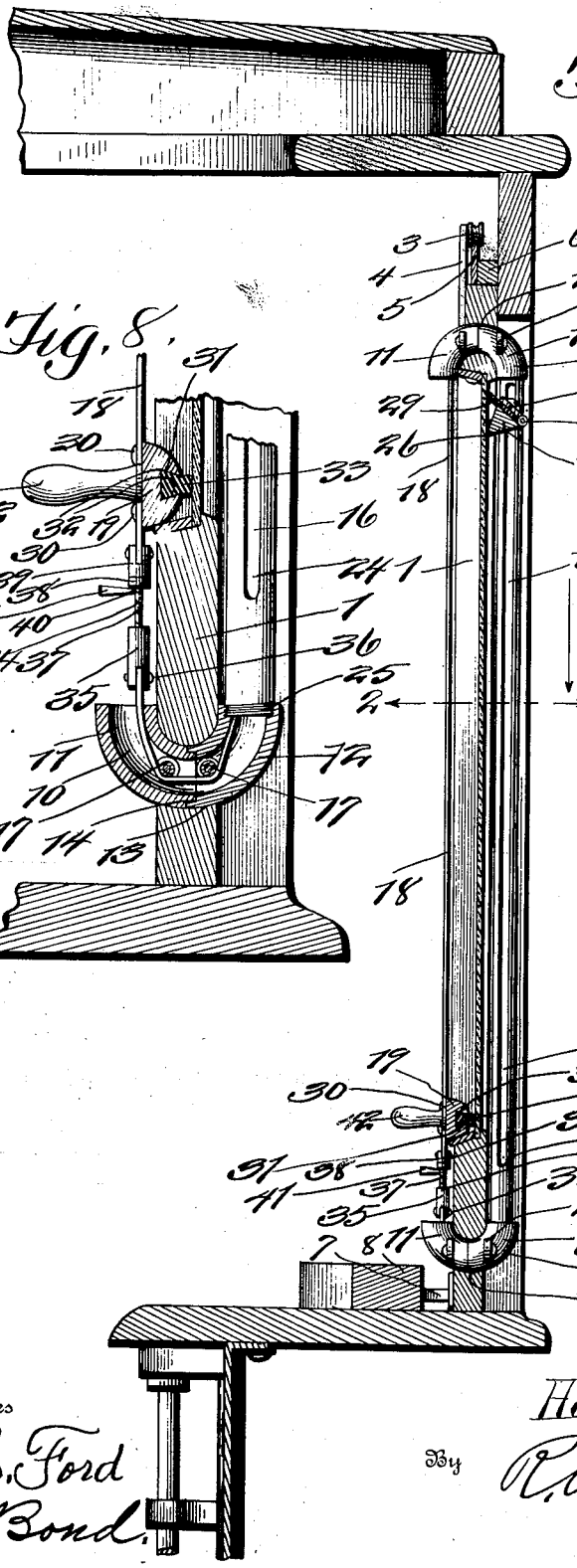


Fig. 8.

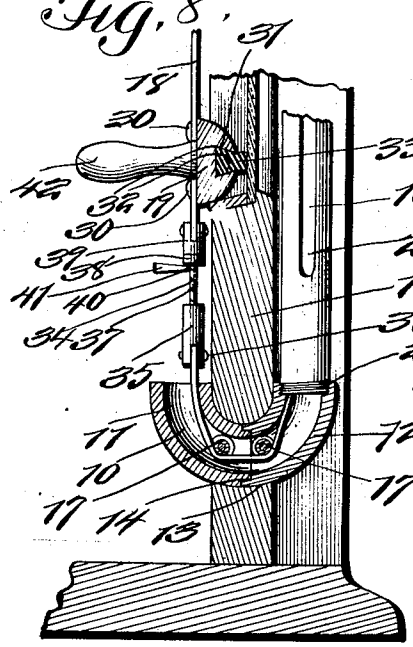
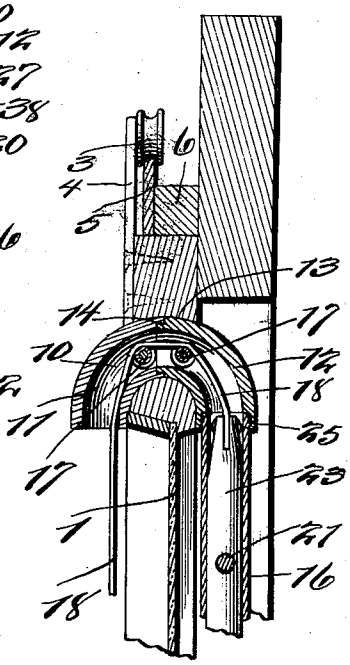


Fig. 6.



Witnesses

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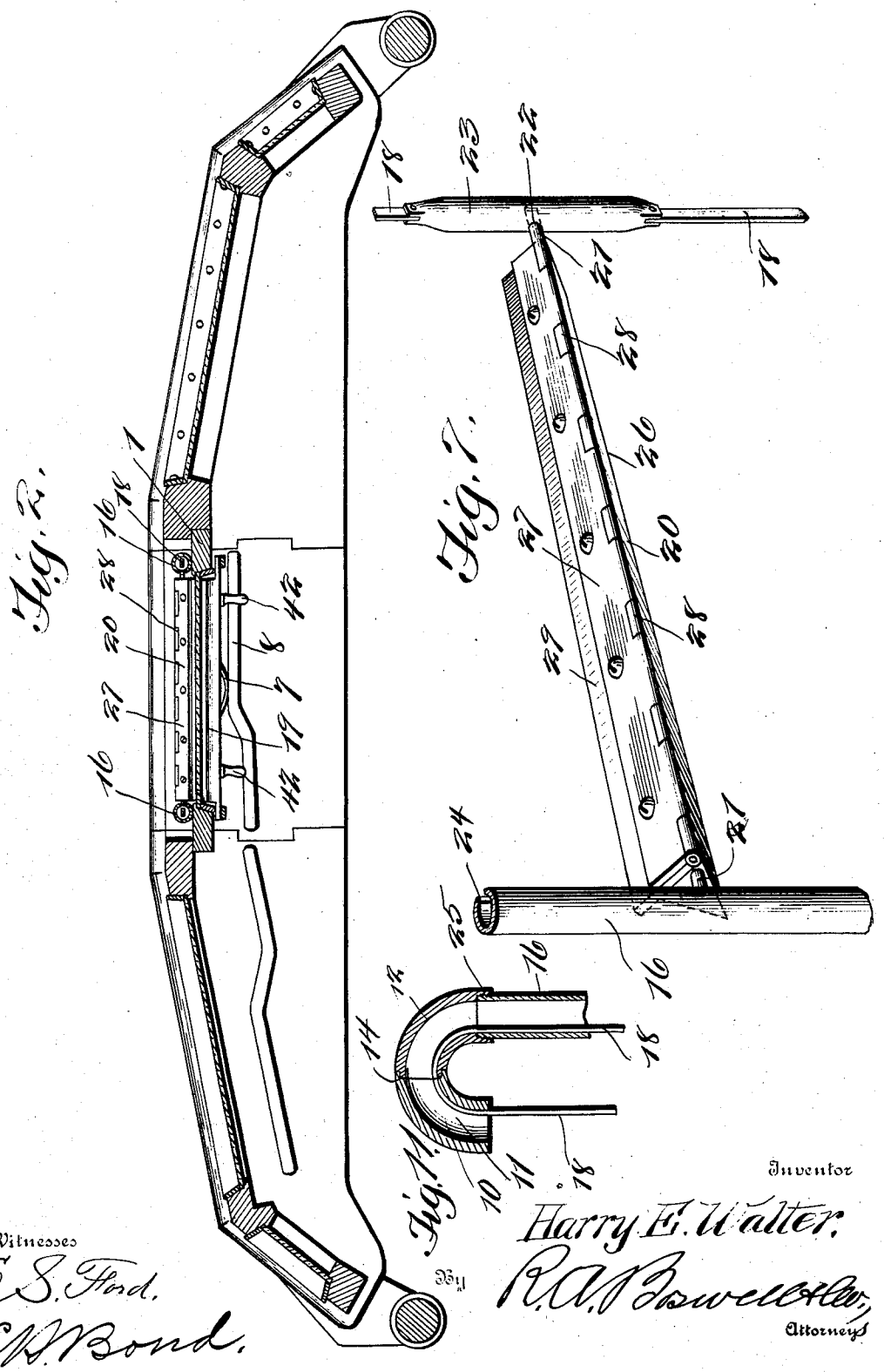
4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

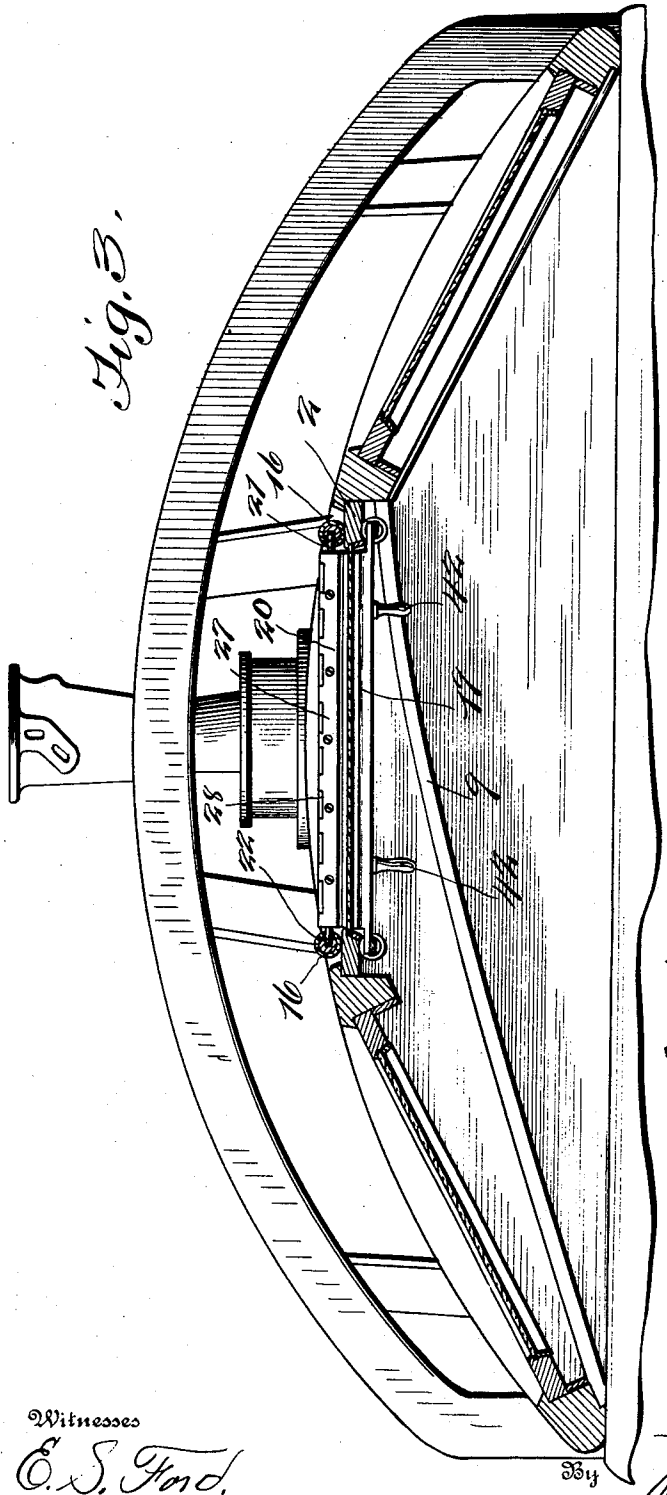

Fig. 5.

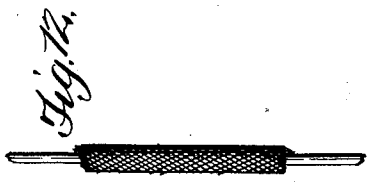

Fig. 12.

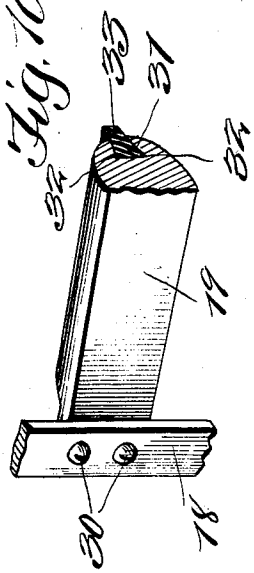

Fig. 10.

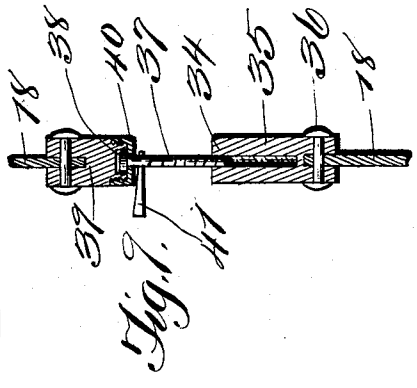

Fig. 1.

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4 SHEETS—SHEET 4.

Fig. 5.

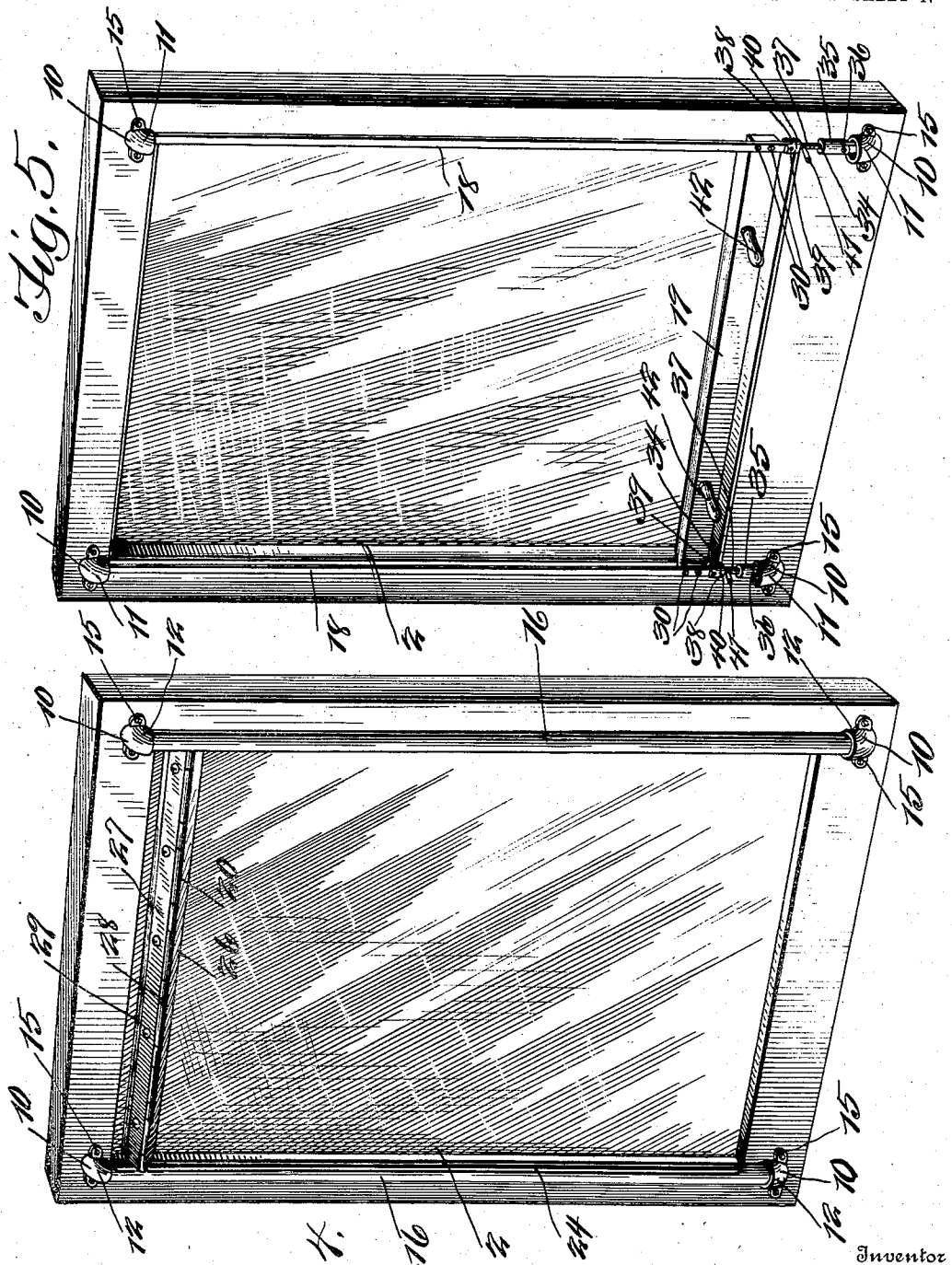

Fig. 4.

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UNITED STATES PATENT OFFICE.

HARRY E. WALTER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-THIRD TO ROBERT A. BOSWELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

WINDOW-CLEANING DEVICE.

No. 857,263. Specification of Letters Patent. Patented June 18, 1907.

Application filed May 16, 1906. Serial No. 317,188.

To all whom it may concern:

Be it known that I, HARRY E. WALTER, a citizen of the United States of America, residing at Washington, in the District of Columbia, have invented a new and useful Window-Cleaning Device, of which the following is a specification.

This invention is relative to a new and useful window cleaning device, the object of which is to provide a device which is simple in construction, and inexpensive to manufacture; this device is adapted for removing the rain spots, snow and ice from the outer face of the glass, and directly following the operation of removing the snow and ice, the same face of the glass is wiped, and at the same time this operation is being carried out, the inner face of the glass is being also wiped.

A further object of the invention is to provide a device of this character which may be attached to the window sash, so the two will move together, thus obviating the necessity of removing the device, when it is desired to move the window to one side.

It will be observed that the drawings illustrate the exact construction of different cars actually in practical use; this is for the purpose of demonstrating the practicability of the device.

No springs are employed to return the device to its resting place, as will be observed the two cleaning cross-heads are operated in unison.

This device is not only adaptable to street car windows, but is equally as well adapted for use in connection with any other window, from which rain spots, snow and ice is to be removed, so as to render the glass clearer and more transparent.

This invention comprises further combinations of elements which will be hereinafter more fully described, shown in the accompanying drawings, and the novel features thereof will be pointed out by the appended claims.

To obtain a full and correct understanding of the details of construction, combinations of elements and advantages, reference is to be had to the hereinafter set forth description and the accompanying drawings in connection therewith, wherein

Figure 1 is a vertical sectional view through the front of a vestibule of a car, showing the improved window cleaning device, applied to a front which was attached after the car was constructed and in practical use. Fig. 2 is a sectional view through Fig. 1 on line 2—2 thereof. Fig. 3 is a cross-sectional view showing the device applied to a different form of a car front, the latter having been constructed in the ordinary way, and without reference to the use of any particular window cleaner. Fig. 4 is a perspective view of the window used in Fig. 3, looking at one side thereof. Fig. 5 is a view similar to Fig. 4, looking at the opposite side. Fig. 6 is an enlarged detail sectional view of the upper part of Fig. 1. Fig. 7 is a perspective view of the cross-head which is used on the outside of the glass. Fig. 8 is an enlarged sectional view of the lower part of Fig. 1. Fig. 9 is a detail sectional view of the tightening device for the steel bands, cables or thin braided rope. Fig. 10 is a detail of the cross-head used on the inside of the glass, showing the manner in which the rubber for wiping the glass is held therein. Fig. 11 is a view of one of the curved terminals showing the pulleys 17 dispensed with. Fig. 12 is a detail view of the braided ropes in lieu of the steel bands.

Making renewed reference to the accompanying drawings, wherein similar reference characters indicate corresponding parts in the several illustrations, by figures, 1 designates the window, as shown in Fig. 1, the length of which is twice its width and 2 indicates the window as illustrated in Figs. 4 and 5, its length being only one and a half times its width; the latter of the two being the most preferable in practical use, but the device is applied to both windows in the same manner.

In Fig. 1 the window is guided in its horizontal movement by means of caster wheels 3, journaled to bracket plates 4, which are secured to the sash of the window, one adjacent each corner of the window, but only one bracket plate and caster wheel being shown; these casters wheels are designed to travel upon metallic tracks 5, which are fastened by screws or other suitable means to a strip 6, against the lower face of which the upper edge of the sash abuts, this construction partly prevents displacement of the window.

The lower portion of the window, as shown in Figs. 1 and 2, is held in close relation with

the frame of the front of the car, by means of a steel-spring loop 7, which is secured to the sash of the window and is designed to bear against the guide strip 8, as will be clearly understood, which guide strip is clearly illustrated in Figs. 1 and 2.

The window which is illustrated in Fig. 3, is guided in its horizontal movement by the strips 9, which are secured, one to the upper portion of the frame of the front and the other to the lower portion of the frame of the front, but one strip being shown.

Fixed to the upper and lower portions of the sash of the window are two semicircular tubings 10, each consisting of two parts 11 and 12, which are partly inserted through apertures 13, of the sash, leaving the adjacent ends to abut, which ends are provided with rabbets 14, to provide a close fit and to partly prevent the displacement of the two parts of the tubing. The two parts of each tubing are provided with apertured lugs 15, which are fastened by screws to the sash of the window, to prevent displacement thereof, as clearly shown in Figs. 4 and 5. The upper and lower tubings are connected by means of a slotted tubing 16, as illustrated in the drawings. Journaled within these tubings are pulleys 17, over which the steel bands 18 travel, that is when the cross-heads 19 and 20 are moved up or down; the cross-head 20 being connected to the steel bands by the screw-threaded pintles 21 thereof which engage the circular threaded recess 22 of the connecting bar 23, which connects the two ends of the steel band as clearly shown in Fig. 7. The slots 24 of the tubing 16, through which the pintles 21 extend, guide the cross heads in their vertical movement, as will be clearly understood from the drawings; the said tubings 16 being connected with the semi-circular tubings by means of screw threads, as at 25, as shown clearly in Figs. 6 and 8 of the accompanying drawings. This cross head 20 is made triangular in cross section, to prevent to a great extent the bending at any point between its ends, by which an extremely rigid cross head is provided, throughout the horizontal plane of the pane of glass; this construction of cross head allows the knife edge 26 thereof to have a firm bearing throughout its length, as will be clearly observed. This cross head is provided with a clamping member 27, which is hinged as at 28, to the body thereof, between which and the cross head, a strip of rubber 29, or any other suitable material is clamped, which rubber is for the purpose of wiping the glass directly after the removal of the snow and ice; this clamping member 27 is securely fastened with relation to the body of the cross head, by screws or other suitable fastening means, as will be observed.

The cross head 19 is securely fastened by its ends, to the steel band by means of screws 30, or any other suitable fastening means; this cross head is provided with a recess 31, horizontally of its length, the walls of which slightly diverge, as at 32, as shown in Figs. 1 and 10 of the drawings, which recess receives a strip of rubber 33, or any other suitable material, which is designed to wipe the glass of the steam on the inside thereof.

The steel bands 18, when adjusted in correct position with relation to the cross heads and the pulleys, are conveniently tightened by the tightening devices 34, which comprise a threaded socket member 35, which is riveted to the steel band, as at 36, and is designed to receive the threaded screw 37, which is swiveled, as at 38, to a cylindrical connecting member 39, by means of a screw threaded cap 40, which is passed over the threaded screw and fitted to the cylindrical connecting member, as illustrated in Fig. 9 of the drawings; to tighten the steel bands the threaded screws are rotated by means of a key 41, which is inserted through an aperture of the said threaded screw, as will be clearly observed from Fig. 9.

Fig. 11 illustrates the semi-circular tubings in which the pulleys are dispensed with, thus allowing the steel bands to travel or move over the smooth inner circumference of the said tubings, as will be observed.

Fig. 12 illustrates braided rope in lieu of using the steel bands.

To conveniently operate the device suitable handles 42 are provided upon the cross head 19 and by raising said cross head, the steam upon the inner face of the glass will be wiped therefrom, at the same time the removal of the snow and ice from the outer face of the glass will be accomplished and directly following these operations, the outer face of the glass will be wiped, as will be clearly understood from the above description in connection with the drawings.

Changes, variations and modifications in detail within the scope of the appended claims may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

From the foregoing, the essential features, elements and operation of the device, will be clearly observed, and, when manufactured in accordance with the invention, an extensive market will be easily obtained therefor.

Having thus fully described the invention, what is claimed as new and useful is:—

1. In a window cleaning device, the combination with a window sash, of pairs of semi-circular tubings fixed to the upper and lower portions of the sash thereof, a pair of slotted tubings connecting said semi-circular tubings upon the outside of the sash, a cross head to move vertically between said slotted tubings, endless bands lying in said slotted tubing and secured to said cross head, a second cross head to move adjacent the inner

face of the window and secured to said bands, and means for tightening said bands.

2. In a window cleaning device, a pair of cross heads, endless bands connected to the cross heads, slotted tubings for guiding one of the cross heads and means carried by the bands for tightening the bands.

3. In a window cleaning device, a cross head triangular in cross section to insure a firm bearing throughout the glass of the window and having a knife edge, one of the outer faces of said cross head being disposed angularly to said line of travel pintles at the ends of said cross head, clamping means on said face, and a strip of rubber held on said face by said clamping means combined with a band having a connecting bar upon each side of said cross head, the connecting bars receiving said pintles.

4. In a window cleaning device, a cross head triangular in cross section to insure a firm bearing throughout the glass of the window and having a knife edge, one of the outer faces of said cross head being disposed angularly to said line of travel, and having means for clamping a strip of suitable material for wiping the glass of the window, means for actuating the cross head, and means for guiding said cross head and its actuating means.

5. In a window cleaning device, a cross head triangular in cross section to insure a firm bearing throughout the glass of the window and having a knife edge, said cross head being adapted to carry a wiper; endless means to coöperate with the cross head, slotted tubings for guiding the cross head and said endless means, and means carried by the endless means for tightening the same.

6. In a window cleaning device, a cross head triangular in cross section to insure a firm bearing throughout the glass of the window and having a knife edge, said cross head being adapted to carry a wiper, endless means to coöperate with the cross head, means carried by the endless means for tightening the same, slotted tubing and curved terminals therefor to guide said cross head and the endless means.

7. In a window cleaning device, a pair of cross heads, endless bands connected therewith, slotted tubings secured to the window sash, top and bottom guides for said bands and means carried by said bands for tightening the same.

8. In a window cleaning device, a cross head triangular in cross section and having the knife edge disposed to bear directly against the glass, a clamping member hinged to one of the faces of said cross head, a strip of rubber to be clamped thereby and means for securely fastening said clamping member.

9. In a window cleaning device, a pair of semi-circular tubings fixed to the upper and lower portions of the sash of the window, and slotted tubings connecting the semi-circular tubings upon the outside of the window, a cross head guided in said slotted tubings, endless means connected with said cross head and a wiper carried by said cross head.

10. In a window cleaning device, a pair of semi-circular tubings fixed to the upper and lower portions of the sash of the window, slotted tubings connecting the semi-circular tubings upon the outside of the window, bands to move through said tubings, a pair of cross heads connected to said bands, wipers carried by said cross heads, and means carried by said bands compensating for the slack or tightness of the bands.

11. In a window cleaning device, a pair of semi-circular tubings fixed to the upper and lower portions of the sash of the window, slotted tubings connecting the semi-circular tubings upon the outside of the window, endless bands designed to move through said tubings pulleys journaled within said semi-circular tubings and over which said bands pass and a pair of cross heads connected to said bands.

12. In a window cleaning device, a pair of cross heads, endless bands to coöperate therewith, slotted tubings, curved terminals therefor, rollers in said terminals, and means carried by said bands for tightening said bands.

13. In a window cleaning device, a pair of semi-circular tubings fixed to the upper and lower portions of the sash of the window, slotted tubings connecting the semi-circular tubings upon the outside of the window, pulleys journaled within said semi-circular tubings, endless bands designed to move through said tubings and over the pulleys; a cross head carrying a wiper, pintles projecting from each end of said cross head and screw-threaded, connecting bars for the bands and having a threaded recess to receive said pintles; a second cross head connected with said bands, a wiper carried by said cross head, handles carried by said second cross head and means carried by said bands for compensating for the slack or tightness of the bands.

14. In a window cleaning device, cross heads for operation upon opposite sides of the glass, endless means connecting said cross heads, means inclosing and guiding a portion of said endless means, curved terminals for said guiding means, and means carried by said endless means for adjusting the tension thereof.

In witness whereof, my signature is hereunto affixed in the presence of two witnesses.

HARRY E. WALTER.

Witnesses:
ROBERT A. BOSWELL,
M. A. BOND.