

Nov. 12, 1940.

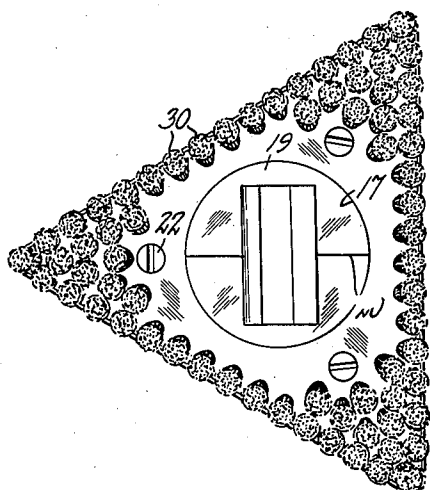
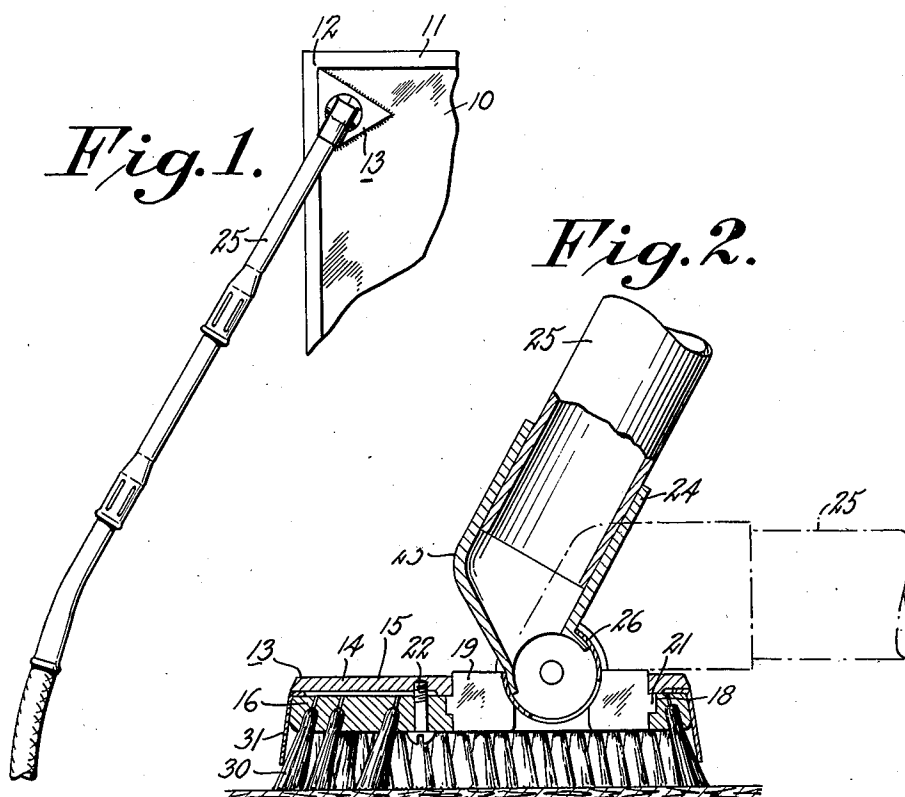
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2,221,630

SUCTION NOZZLE

Filed Oct. 26, 1936

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

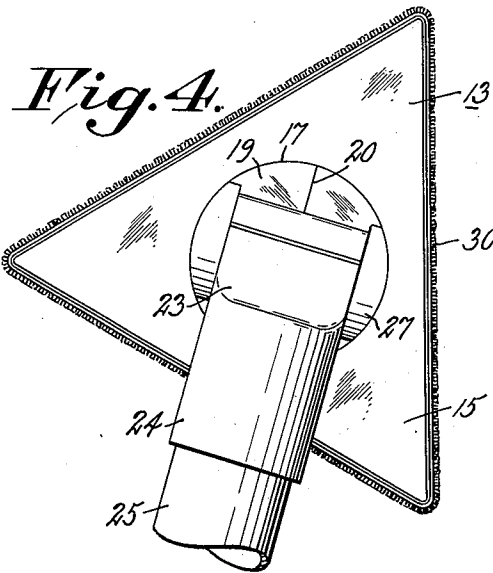


Fig. 5.

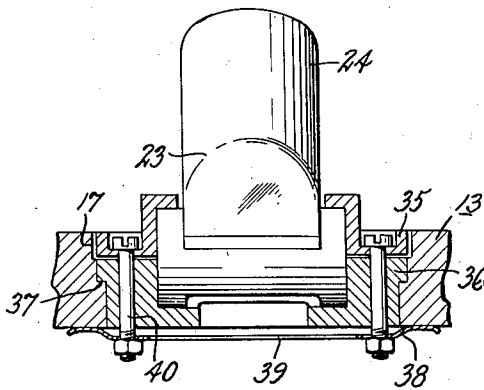
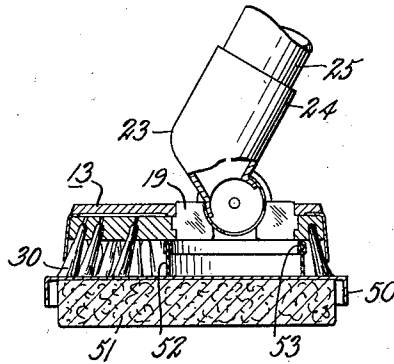


Fig. 6.



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UNITED STATES PATENT OFFICE

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SUCTION NOZZLE

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Application October 26, 1936, Serial No. 107,617
In Germany November 4, 1935

2 Claims. (Cl. 285—96.5)

My invention relates to suction nozzles and more particularly, to a brush nozzle especially adapted for cleaning windows and other surfaces enclosed within a frame-like boundary.

One of the objects of my invention is to provide a suction tool of the above nature so constructed that it may be manipulated readily into the corners formed by a frame bounding the surface. In order to accomplish this object, the brush is made preferably triangular with no angle greater than 90 degrees. Also, the sides of the nozzle are straight. The member adapted to be connected to the suction conduit is so mounted on the body portion of the nozzle that the nozzle may turn freely in the plane of the surface being cleaned and the suction conduit may be pivoted in any plane at right angles to the surface.

Another object of my invention is to provide an arrangement in conjunction with a suction nozzle for applying a window cleaning substance to a window.

Other objects and advantages of my invention will be apparent from the following description considered in connection with the accompanying drawings, which form a part of this specification, and of which:

Fig. 1 is a view showing my improved nozzle as used for cleaning a window;

Fig. 2 is a cross-sectional view of the nozzle shown in Fig. 1;

Fig. 3 is a bottom view of the nozzle;

Fig. 4 is a top view of the nozzle;

Fig. 5 is a cross-sectional view of another embodiment of my invention; and

Fig. 6 is a cross-sectional view of the nozzle shown in Figs. 1 through 4, and a cleaning material applying device connected thereto.

Referring more particularly to Fig. 1, reference character 10 indicates a pane of glass supported within a frame 11. As is usual with windows or mirrors, the sides of the frame are joined at right angles, as is designated at 12.

Reference character 13 indicates generally a suction nozzle in accordance with the present invention. Nozzle 13 includes a body member 14 made up of an upper plate 15 and a lower plate 16. These plates are triangular in shape and preferably have the shape of an equilateral triangle.

Plates 15 and 16 are formed with aligned central openings 17 and plate 16 is formed with an annular groove or recess 18. A circular member 19, preferably composed of two semi-circular parts meeting along the line 20, is formed with a circular flange 21 adapted to be received within

groove 18, and is thus rotatably retained between plates 15 and 16 when the plates are secured together by means of screws 22.

A suction conduit connection member 23 is formed with a tubular portion 24 adapted to frictionally receive a suction conduit 25. Rigidly secured to the opposite end of member 23 is a portion of a cylinder 26, the length of the cylinder being greater than the diameter of member 23. Each part of circular member 19 is formed with a trunnion 27 having a circular recess adapted to rotatably receive the projecting end of cylinder 26. Member 19 is made in two parts to permit assembly.

Lower plate 16 is provided with brush bristles 30 extending downwardly adjacent to the side edges thereof. Preferably, these bristles are inclined outwardly so as to extend slightly beyond the edges of body 13 in order that they will contact a frame, such as shown at 11, and reach into the corners of the frame.

If desired, a protective rim 31 may be provided so as to extend downwardly from the body 13 adjacent to the bristles. If desired, this rim may be secured in place by being clamped between plates 15 and 16. The rim terminates short of the free ends of the bristles, but close thereto, so that the air flowing into the nozzle is forced to pass between the bristles close to the surface being cleaned.

The above described device operates as follows:

Suction conduit 25 is connected to a vacuum cleaner of known design, preferably by means of a flexible hose. If it is desired to clean the window 10, the nozzle 13 is moved back and forth thereover. The bristles dislodge any dirt adhering to the glass, or any cleaning preparation which has been applied thereto and allowed to dry, and the air passing between the bristles entrains the dirt or cleaning material, which is carried through the connection member 23 and the suction conduit 25 to the vacuum cleaner.

Due to the straight sides of the nozzle, it may be moved along the glass against the frame 11 and into the corner 12 formed by the frame. Herebefore, these corners have been difficult to clean due to the fact that it has been impossible to get the nozzle directly into them. Member 19 being rotatably mounted in the body 13 enables the latter to turn about the hose connection member in the plane of the surface being cleaned. Thus, if the nozzle shown in Fig. 1 is being moved upwardly along the window and against the frame 10, as soon as the upper point of the nozzle strikes the upper portion of the frame, the nozzle will rotate

in a counter-clock-wise direction until the upper side of the nozzle is flush up against the upper portion of the frame. Thereafter, the nozzle may be moved horizontally along this upper portion until the next corner is reached.

Due to the fact that the hose connection member 23 is rotatably mounted on member 20, the suction conduit 25 may be pivoted to any convenient angle with respect to the surface being cleaned.

In the embodiment shown in Fig. 5, the cylinder 26 of hose connection member 23 is rotatably received in a circular member made up of parts 35 and 36, the parts together forming a cylindrical recess to receive member 26. In this embodiment, body member 13 constitutes a single triangular plate provided with a central recess 17, formed with a shoulder 37. Member 36 is formed with a corresponding shoulder. A resilient disc 38 provided with a central opening 39 is secured to members 35 and 36 by means of bolts 40. Disc 38 bears against the lower face of body member 13 and retains members 35 and 36 in place, the force exerted by the resiliency of plate 38 serving to maintain a substantially airtight joint at shoulder 37 as well as between cylinder 26 and members 35 and 36. Otherwise, the construction of the embodiment shown in this figure may be the same as that described above and the operation is the same.

In Fig. 6, there is shown an arrangement whereby the nozzle may be employed to apply the cleaning material. Reference character 50 designates the cover of a container for containing the cleaning material. This container and the cover therefor are of the same shape as the nozzle, that is—triangular. Secured within the cover is an absorbent pad 51 made of felt, for instance. The upper central face of cover 50 is formed with a rim 52, which may serve as a handle for removing the cover from its container. The upper edge of rim 52 is preferably provided with a rubber packing member 53 and the rim is substantially the same height as the bristles 30 and has a diameter greater than that of member 19. Consequently, when the nozzle is placed over cover 50, rim 52 and packing 53 will contact the underside of body 13 and if suction is applied, through suction conduit 25 and connection member 23, this suction will serve to retain the cover member 50 in place and without unduly deforming the bristles. Due to the fact that the diameter of rim 52 is greater than that of member 19, the rim does not contact member 19 and

consequently, the latter may freely rotate within the body member 13. In use, pad 51 is saturated with liquid cleaning material and when moved over the glass by means of the nozzle and conduit 25 connected thereto, the cleaning material is deposited on the glass. Thus, the cleaning material may be applied to high parts of a window which would otherwise be out of reach from the floor. Thereafter, the vacuum cleaner motor is stopped in order to break the suction acting on the upper side of cover 50 so that the cover may be removed from the nozzle. As soon as the cleaning material has dried, it may be removed by the nozzle.

While I have shown more or less specific embodiments of my invention, it is to be understood that this has been done for purposes of illustration only and that the scope of my invention is to be limited by the appending claims, viewed in the light of the prior art.

What I claim is:

1. In a suction nozzle, a body member adapted to be disposed parallel to a surface to be cleaned, annular structure rotatably mounted on said body member and rotatable about an axis at right angles to said surface, said structure including parallel plates formed with aligned semi-cylindrical recesses having an axis parallel to said surface, a hollow suction conduit connection member having a cylindrical portion rotatably receivable within the cylindrical recesses formed between said plates, and common resilient means urging said plates against said cylindrical portion and urging said structure against said body member to retain the parts in rotatable but substantially air-tight relationship.

2. In a suction nozzle, a body member adapted to be disposed parallel to a surface to be cleaned, annular structure rotatably mounted on said body member and rotatable about an axis at right angles to said surface, said structure including parallel plates formed with aligned semi-cylindrical recesses having an axis parallel to said surface, a hollow suction conduit connection member having a cylindrical portion rotatably receivable within the cylindrical recesses formed between said plates, a pin extending through said plates, and a spring member engaging said pin and said body member for maintaining said plates in contact with said cylindrical portion and for urging said structure against said body member to retain the parts in rotatable but substantially airtight relation.

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