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3,254,360

WINDOW WASHER WITH VACUUM PICK-UP

Original Filed Nov. 13, 1961

FIG-6

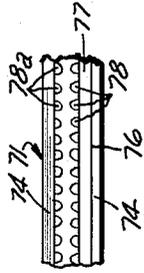


FIG-3

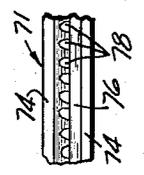


FIG-2

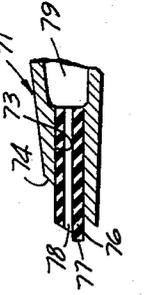


FIG-1

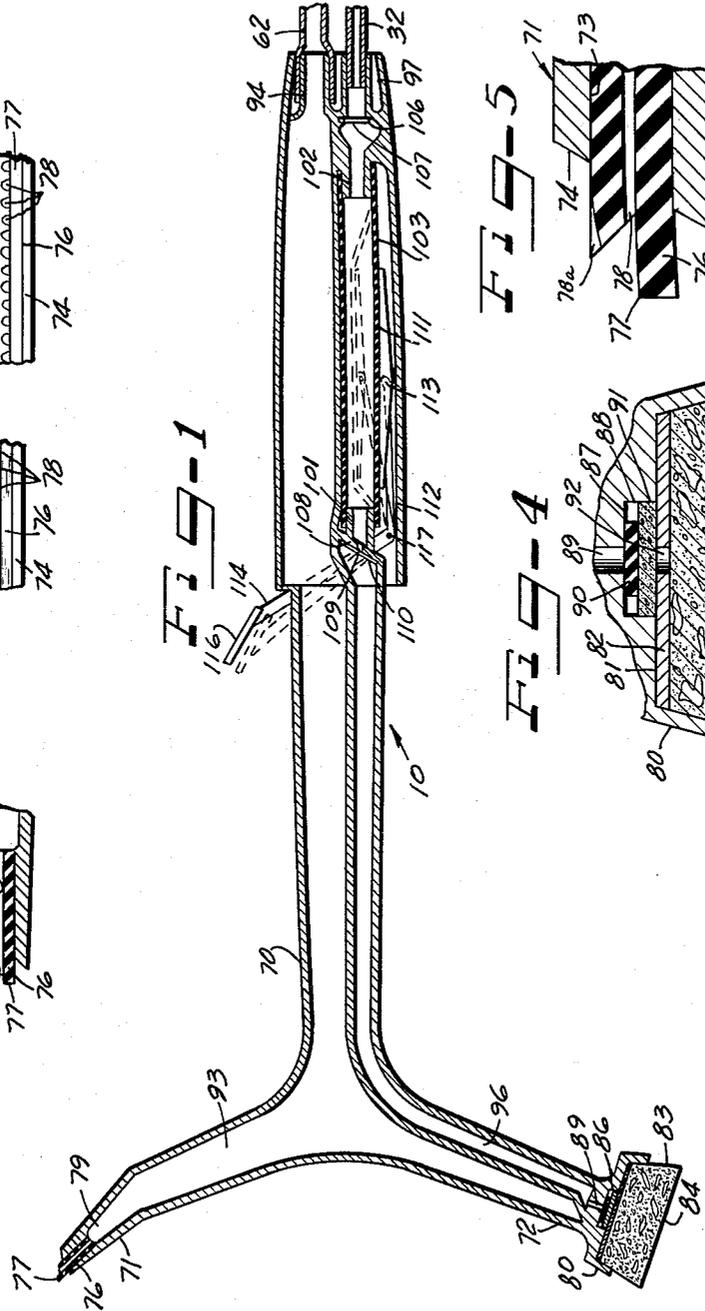


FIG-5

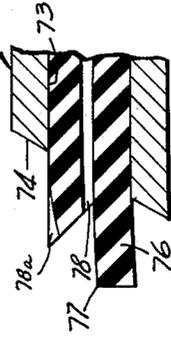
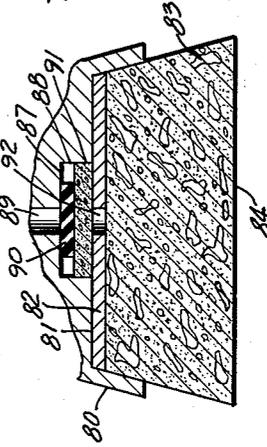


FIG-4



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**WINDOW WASHER WITH VACUUM PICK-UP**

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Original application Nov. 13, 1961, Ser. No. 151,772, now Patent No. 3,184,780, dated May 25, 1965. Divided and this application Nov. 17, 1964, Ser. No. 411,810  
2 Claims. (Cl. 15-402)

This application is a division of my copending application Serial No. 151,772, filed November 13, 1961, now U.S. Patent No. 3,184,780 dated May 25, 1965.

This invention relates generally to cleaning apparatus and more particularly relates to a cleaning tool incorporating a dual head and nozzle adapted to be interchangeably connected to either a conventional vacuum cleaner or to its own motor fan unit and further characterized by an integral pump actuatable by the operator to selectively provide a supply of cleaning fluid to the cleaning head.

It is an object of the present invention to provide in a cleaning tool a dual head construction wherein a Y-shaped tool has a squeegee element on one arm and is adapted to have a washing head on the other arm.

A still further object of the present invention is to provide a cleaning tool having a squeegee head with a row of passages extending inwardly from just adjacent the action edge of the squeegee to the hollow interior of the tool, whereby a vacuum bias may be maintained on the passages to pick up fluid accumulated on the action edge of the squeegee element.

Many other features, advantages and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description which follows and the accompanying sheets of drawings in which a preferred structural embodiment of a cleaning apparatus incorporating the principles of the present invention is shown by way of illustrative example.

On the drawings:

FIGURE 1 is a cross-sectional view of the cleaning tool provided in accordance with the principles of the present invention.

FIGURE 2 is an enlarged fragmentary cross-sectional view illustrating additional details of the squeegee head.

FIGURE 3 is a fragmentary elevational view illustrating further details of the squeegee head.

FIGURE 4 is a fragmentary cross-sectional view of the washer head.

FIGURE 5 is an enlarged fragmentary cross-sectional view illustrating additional details of the squeegee head.

FIGURE 6 is a fragmentary elevational view illustrating further details of the squeegee head.

As shown on the drawings:

Referring now to FIGURES 1-6, the dual head cleaning tool is shown generally at 10 and comprises a generally Y-shaped member including a main body portion 70 having oppositely extending legs including one leg forming a squeegee head 71 and a second leg 72 forming a cleaning or washing head.

The squeegee head 71 has a transversely elongated portion formed with a transverse slot 73 opening out of a beveled end face 74.

A resilient squeegee element 76 is received within the transverse slot 73 and has an action edge 77 which projects outwardly beyond the beveled end face 74 for engagement with the surface being cleaned.

Also received within the transverse slot 73 is a port member constituting a resilient flat insert having one face thereof fluted to form a row of recesses 78. The fluted recesses 78, together with the squeegee element 77 form passageways extending inwardly from the action edge 77

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to the hollow interior 79 of the squeegee head 71. The port member may constitute a resilient flat insert having one face thereof fluted to form a row of recesses 78 and the other face thereof notched to form a row of inclined recesses 78a (FIGURE 5). Therefore, when the port member contacts the surface to be cleaned, air and water are allowed to pass through the inclined recesses 78a and into recesses 78 to passage 79.

The cleaning or washing head 72 is characterized by side walls 80 forming a recess and having a bottom wall 81. Received within the recess and engaged against the bottom wall 81 is a rigid backing plate 82 against which is bottomed a cellular mass such as a sponge 83. The sponge 83 extends outwardly of the flanges 80, thereby to provide an action surface 84 for engaging a surface to be cleaned with a scrubbing action.

Within the wall 81 and behind the rigid backing plate 82 there is formed a valve compartment 86 having a bottom wall 87 and side walls 88. The bottom wall has formed therein an opening 89 which is normally closed by a rubber or resilient disk valve 90. To retain the disk valve 90 in yieldable closing relation with the opening 89, a continuous biasing means 91 is situated between the rigid backing plate 82 and the valve disk 90. The continuous biasing means 91 could take the form of a spring, however, it may conveniently take the form of a resilient spongy material as illustrated in FIGURE 4.

The rigid backing plate 82 is formed with suitable passage means 92 communicating the valve compartment 86 with the cellular mass 83. Accordingly, when cleaning liquid is supplied through the opening 89 to the valve compartment 86, the cleaning liquid will saturate the sponge 83 and will be supplied to the action surface 84 in proper amount to effect a desirable cleaning action.

As shown in FIGURE 1, the dual head 10 has a passage 93 which communicates with the hollow interior of the squeegee head 71 and the passage 93 leads rearwardly through the wand 11, there being a nipple 94 provided for connection to the conduit 62 so that vacuum bias may be applied to the passage 78 for effecting a vacuum pick-up at the action edge of the squeegee.

The dual head 10 is also formed with a passage 96 which communicates with the opening 89 and which leads rearwardly through the wand 11, there being formed a nipple 97 connected to the conduit 32 and by means of which cleaning liquid may be supplied to the sponge 83.

The wand 11 of the present invention is particularly characterized by a pump. In this connection, note that the wand 11 has a rigid housing 100 which forms a portion of the passages 93 and 96.

With specific regard to the passage 96, there is provided a pair of end fittings or nipples 101 and 102 which are spaced apart from one another longitudinally and which serve to connect opposite ends of an elastic tube shown at 103.

The housing 100 provides a rigid backing member 104 adjacent one side of the elastic tube 103.

The nipple 102 is formed with a valve seat 106 closed by a check valve 107 which may conveniently take the form of a flap valve which moves between the full line position and a dotted line position as shown in FIGURE 6.

Likewise, the nipple 101 is provided with a wall 108 in which is formed a valve opening 109 regulated by a check valve 110. The valve 110 can also conveniently comprise a flap valve which moves between the full and dotted line positions shown in FIGURE 6.

A movable piston member 111 is engaged against the elastic tube 103 at the side opposite the rigid backing member 104 and means are provided to urge the movable piston member 111 inwardly, thereby to flex the elastic tube 103 and temporarily alter the volume of that portion

of the passage 96 between the check valves 107 and 110, thereby to develop a pumping action.

To effect that end, there is provided a lever member having a first arm 112 pivotally connected as at 113 to the movable piston member 111. The lever member has a second arm 114 on the end of which is formed a manual actuating handle 116.

A fulcrum effects a pivotal connection as at 117 between the lever arm and the rigid housing 100. Thus, upon rocking the lever arm through engagement of the actuating handle 116, the movable piston 111 is moved inwardly or outwardly to flex the elastic tube 103, thereby pumping cleaning fluid from the compartment 20 through the conduit 32 and the passage 96 to the washing head 72.

In use, the dual head 10 together with the wand 11 and the casing unit 12 are interconnected by the conduit means 32 and 62. The user can operate the actuating handle 116 of the pump contained within the housing 100 of the wand 11, whereupon cleaning liquid from a source will be directed to the passage 96 to the sponge 83, whereupon the action surface 84 engages the surface to be cleaned in the presence of the cleaning agent.

The operator then turns the dual head 10 through 180° and engages the action edge 77 of the squeegee element 76 against the surface, whereupon liquid and soil is removed and drawn by vacuum bias through the passages 78 into the hollow core 79 for transmission via the passage 93 and the conduit 62 to the tube 60. The compartment 21, when filled with liquid and dirt 49 will automatically close the valve opening 44 by engagement of the valve head 46 thereagainst to cut off the supply of vacuum bias from the motor fan unit 50, or the vacuum cleaner 66, depending upon how the device is being used by the operator.

Although minor modifications might be suggested by those versed in the art, it should be understood that I wish to embody within the scope of the patent warranted hereon all such modifications as reasonably and properly come within the scope of my contribution to the art.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A cleaning tool comprising a squeegee head having a rigid hollow support member formed with an end face, said support member having an elongated transverse slot formed therein and opening out of said end face, a flat

resilient squeegee element in said slot having an action edge projecting outwardly of said end face of said support member to engage a surface, and a flat resilient port member confined in said slot adjacent said squeegee element and terminating inwardly of said action edge but outwardly of said end face, said port member being fluted in one face thereof to form together with the adjoining portions of said squeegee element a plurality of closely spaced passages extending from a zone just adjacent said action edge of said squeegee element to the interior of said hollow support member and having the opposite face thereof notched to form a row of inclined recesses extending through the outer edge thereof in a direction between said action edge and said end face, and connection means on said support member for connecting the hollow interior thereof to a vacuum source for effecting a suction at said passages, whereby engagement of said port member with a surface to be cleaned allows air and water to pass through said inclined recesses and into said passages while said action edge develops a squeegeeing action

2. A cleaning tool as defined in claim 1 and further characterized by said tool being Y-shaped and comprising a main body section and oppositely extending arm portions, said squeegee head comprising one of said arm portions and having said end face thereof beveled to be substantially parallel to said main body section.

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