Dec. 2, 1952 W. A. HUMPHREY 2,619,671

SUCTION CLEANER TOOL ASSEMBLY

Filed Aug. 15, 194[illegible] 2 SHEETS—SHEET 1

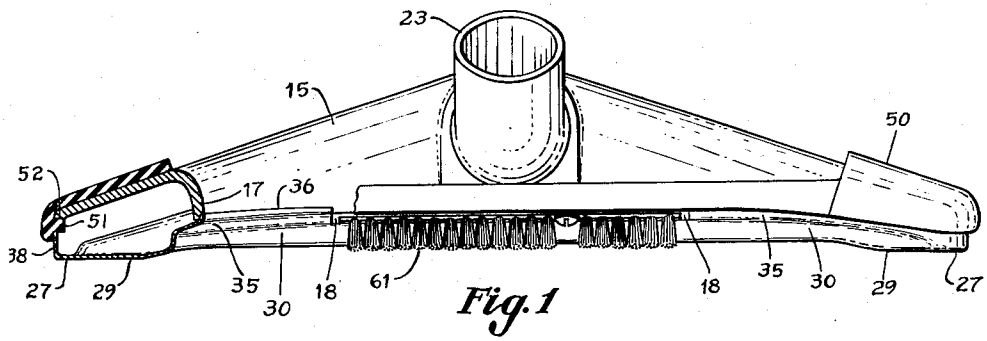


Fig. 1

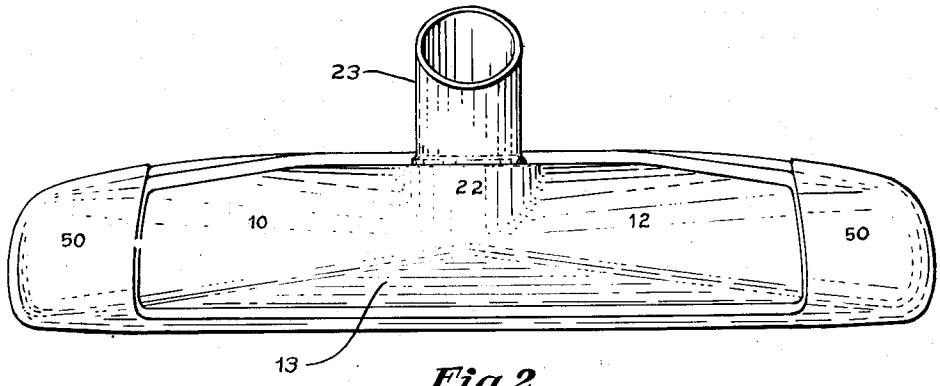


Fig. 2

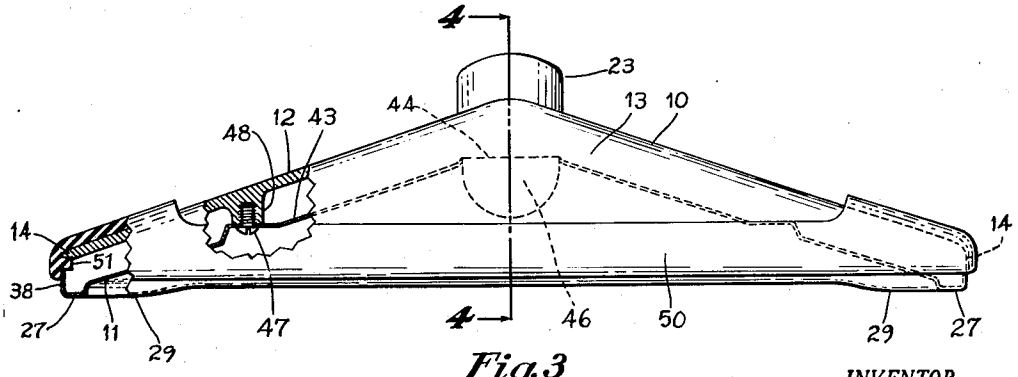


Fig. 3

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SUCTION CLEANER TOOL ASSEMBLY

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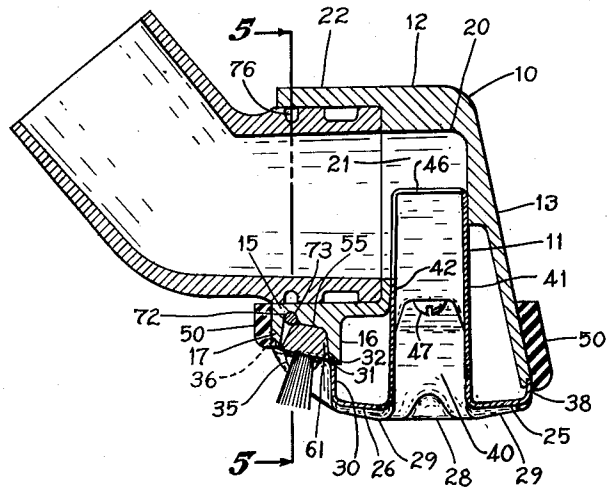


Fig. 4

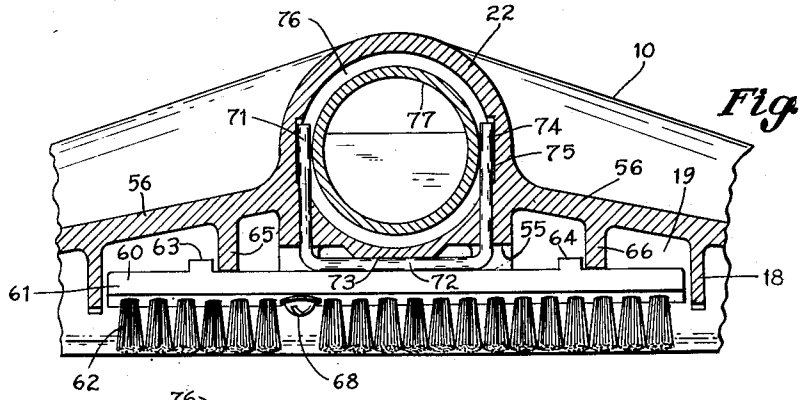


Fig. 5

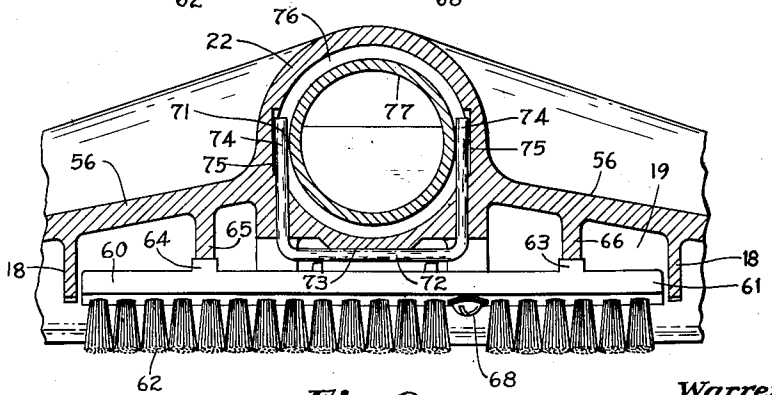


Fig. 6

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SUCTION CLEANER TOOL ASSEMBLY

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2 Claims. (Cl. 15—398)

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The present invention relates to a surface-cleaning tool adapted for use with suction cleaners.

An object of the invention is to provide a new and improved cleaning tool. Another object is to provide a cleaning tool having a brush removable independently of the nozzle lip for access to a swivel joint between the cleaning tool and a hose connected to a suction cleaner. Other objects and advantages of the invention will be apparent from the following specification and drawings, wherein:

Figure 1 is a rear view partly in section of the cleaning tool;

Figure 2 is a top plane view;

Figure 3 is a front view partly in section;

Figure 4 is a section along the line 4—4 in Figure 3;

Figure 5 is a section along the line 5—5 in Figure 4, showing one adjusted position of the brush; and

Figure 6 is similar to Figure 5, but showing the brush reversed to another adjusted position.

The embodiment of the invention herein disclosed comprises a nozzle having a body formed of a cast metal upper portion 10 and a lower portion 11 formed of a metal stamping. The upper portion 10 of the nozzle includes a top wall 12, front wall 13, opposite end walls 14—14 and a rear wall 15, the latter at its central portion having spaced side walls 16 and 17 and end walls 18—18 defining respectively the front, rear and end walls of a brush housing 19. Depending from the top wall 12 is a semi-circular wall 20 which defines in part an outlet 21 to socket 22 formed above the brush housing 19 for receiving a conduit 23 which is adapted to be connected to an unshown hose having its opposite end connected to suction-creating means in a manner well known in the art.

The lower portion 11 of the nozzle body has a front lip 25 and a rear lip 26 which merge at their opposite ends into nozzle end lips 27—27, and the lips 25, 26 and 27 cooperate to define a suction nozzle inlet 28. The surfaces of the end lips 27—27 and a portion 29 of the opposite ends of the front and rear nozzle lips form supporting surfaces or shoes which lie in a plane lower than the intermediate portions of the front and rear lips. The rear lip 26 slopes upwardly and rearwardly, while the end lips 27—27 and the adjacent portions 29 are convexed for inclining the nozzle rearwardly during cleaning operation.

The rear nozzle lip 26 is provided with an upstanding flange 30 extending throughout the

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length of the nozzle, and a portion 31 of the flange 30 abuts the lower edge 32 of the front wall 16 of the brush housing 19. Extending laterally of the flange 30 at opposite ends of the brush housing 19 are spaced shoulders 35—35 each of which has an upstanding rear flange 36 abutting the lower edge of the rear wall 17 of the upper body portion 10. Each of the shoulders 35—35 is arched upwardly from the end lips 27—27 and terminates at the end walls 18—18 of the brush housing 19 in the upper nozzle portion 10. Projecting upwardly from the front lip 25 and the end lips 27—27 is a flange 38 which merges into the rear flange 30 and the flange 38 abuts the front wall 13 and end walls 14—14 of the upper nozzle portion 10. A suction air passageway 40 is formed by an upstanding front wall 41, a rear wall 42 and a top wall 43, the latter having a central flat portion 44. A portion of the rear wall 42 and the flat top portion 44 is cut away to cooperate with the semi-circular wall 20 in upper body portion 10 to form an outlet 46 from the suction air passageway 40 to the angular conduit 23. The portions 10 and 11 of the nozzle body are removably attached together by a plurality of screws 47 threaded into lugs 48 depending from the top wall 12.

A furniture guard 50 of rubber or other suitable material is arranged along the front wall, the ends of the top wall and rear wall of the nozzle, and is provided with a plurality of spaced lugs 51 which are inserted in marginal slots 52 formed in the lower edges of the walls of the upper nozzle portion 10. And the outer upstanding flanges 33 and 33 of the lower nozzle body portion 11 abut the lugs 51 to secure the furniture guard in position.

The brush housing 19 is completely arranged in the upper nozzle body portion 10 and is defined at its top by a bottom wall 55 of the socket 22 and walls 56—56 extending from the socket 22 to the housing end walls 18—18.

Arranged in the brush housing 19 is an elongated brush back 60 of brush 61 and in which are seated tufts or bristles 62. Formed on the brush back 60 are lugs 63 and 64 which are spaced an unequal distance from the opposite ends of the back 60 for optional abutment against seats 65 and 66 depending from the top wall 56 of the brush housing. When the bristles 62 are new, the brush back 60 is inserted in the brush housing 19 so that the back 60 abuts the flat wall 55 and the lugs 63 and 64 are out of alignment respectively with the seats 65 and 66, and the brush is held in position by a screw 68 threaded

into the wall of the socket 22. After the brush bristles 62 have become worn, the brush is adjusted by reversing the brush back 60 so that the lugs 63 and 64 abut the seats 65 and 66 respectively.

A swivel joint between the socket 22 and the conduit 23 comprises a U-shaped locking member 71 having its bight portion 72 seated in a recess 73 in the flat socket wall 55. Legs 74—74 of the member 71 project upwardly through holes 75—75 into an annular groove 76 in the exterior surface of the portion 77 of the conduit 23 to permit the latter to be rotated with respect to the nozzle and prevent longitudinal displacement with respect to the nozzle. The locking member is held in position by the brush back 55 as shown in Figure 4.

In operation, the conduit 23 is connected to an unshown hose, the opposite end of which is connected to a source of suction to create suction in the nozzle inlet 28. The nozzle lips 25—26 and 27 glide along the surface being cleaned and dirt-laden air is drawn through the suction inlet 28, suction passageway 40, outlet 46 and the conduit 23 to an unshown dirt filter. It will be noted that the suction air passageway 40 is substantially triangular in cross-section transversely of the nozzle in that its top wall 43 converges uniformly toward the outlet 46 to provide a smooth interior for passage of the dirt-laden air.

When it is desired to brush the surface being cleaned, the operator depresses the conduit 23 to rotate the nozzle about the convex shoes 29—29 to place the bristles 62 into engagement with the surface being cleaned, so that the dirt is loosened and then removed by the suction in the nozzle inlet 28. After the brush has been used for a considerable time and the bristles 62 have become worn and they no longer engage the surface being cleaned, it is desirable to adjust the brush so that the original extension of the bristles is again attained. In order to adjust the extension of the bristles, the brush 60 is reversed end for end to the position shown in Figure 6 and the lugs 63 and 64 respectively abut the seats 65 and 66, which results in the bristles 62 being extended a length equal to the height of the lugs 63 and 64.

If it is desired to disconnect the swivel joint, the brush 60 is removed by unthreading the screw 68 and thereafter the locking member 71 is slidably removed from the grove 76 and holes 75—75. In assembling the swivel joint, the lockng member is inserted in the holes 75—75 into the groove 76 and is held in operative position by attaching the brush 60 in the housing 19.

I claim:

1. In a suction cleaning tool, a body, a nozzle in said body having a perimeter lip engaging the surface being cleaned, a tubular handle communicating with said nozzle to convey dirt-laden air to a source of suction, a brush housing in said body having an opening for inserting a brush, means

rotatably connecting said handle to said body including recessed means in said handle telescoped within said body, spaced holes in said brush housing extending to said recessed means, and a substantially U-shaped member having its spaced legs extending through said holes into said recessed means, the bight portion of said member extending into said opening for access of the operator's fingers to permit positioning of said member in said spaced holes and recessed means, a surface engaging brush inserted through said opening into said housing into contact with said bight portion to secure said U-shaped member to said body, and means extending through said brush into said housing for removably securing said brush in said housing, said brush housing arranged at one side of said perimeter lip for removable connection of said brush and U-shaped member without disturbing said perimeter lip.

2. In a suction cleaning tool, a body, a nozzle in said body having a perimeter lip engaging the surface being cleaned, a tubular handle communicating with said nozzle to convey dirt-laden air to a source of suction, a brush housing in said body having an opening for inserting a brush, means rotatably connecting said handle to said body including recessed means in said handle telescoped within said body, spaced holes in said brush housing extending to said recessed means, a substantially U-shaped member inserted through said opening with its spaced legs projecting through said holes into said recessed means, a surface engaging brush inserted through said opening into said brush housing to close said opening and prevent removal of said U-shaped member, and means extending through said brush into said housing for removably securing said brush in said housing and providing access to said U-shaped member, said brush housing arranged at one side of said perimeter lip for removable connection of said brush and U-shaped member without disturbing said perimeter lip.

WARREN A. HUMPHREY.

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