Oct. 9, 1951 W. A. HUMPHREY 2,570,347

SWIVEL JOINT

Filed Aug. 15, 1946 2 Sheets-Sheet 1

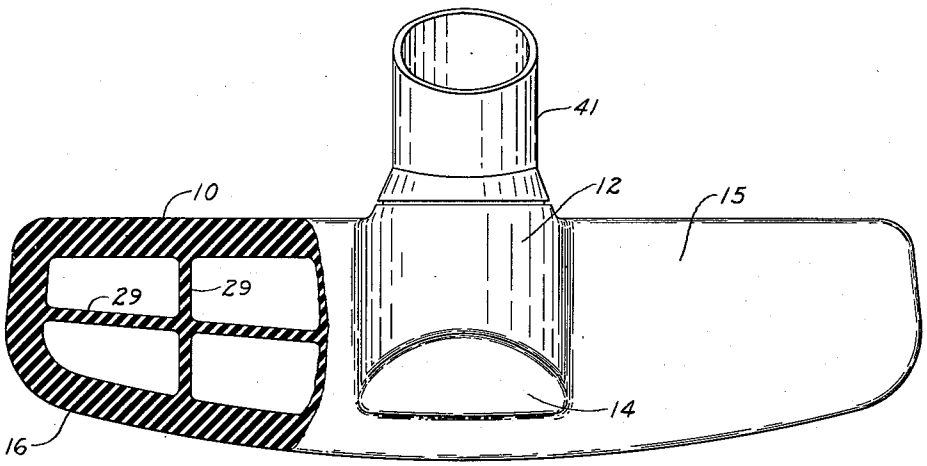


Fig. 1

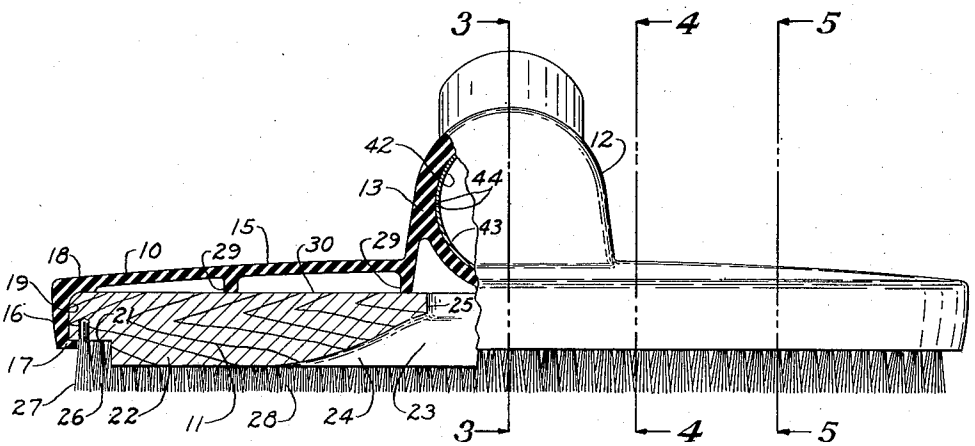


Fig. 2

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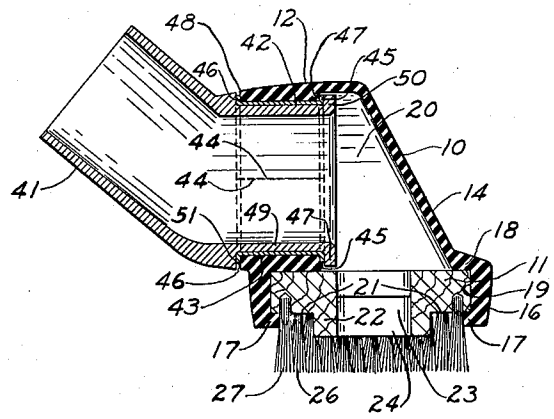


Fig. 3

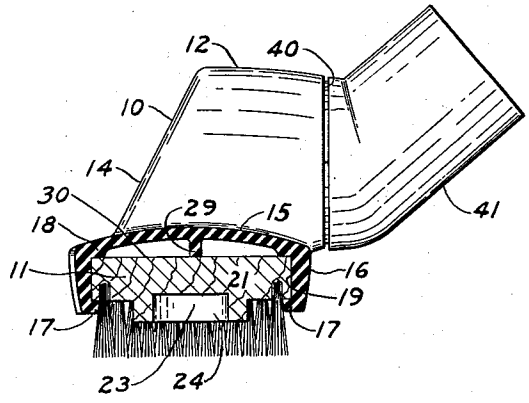


Fig. 4

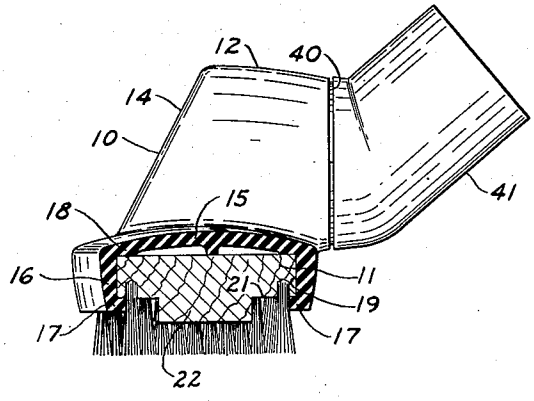


Fig. 5

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UNITED STATES PATENT OFFICE

2,570,347

SWIVEL JOINT

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Application August 15, 1946, Serial No. 690,702

4 Claims. (Cl. 285—97.5)

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The present invention relates to new and novel improvements in a surface-cleaning tool adapted for use with suction cleaners.

An object of the invention is to provide a new and improved surface-cleaning tool. Another object is to provide a cleaning tool having a resilient body for attaching thereto a brush and a conduit. Another object is to provide a swivel joint between a conduit and the cleaning tool. A further object is to provide a cleaning tool having a resilient body which acts to secure thereto a swivel joint. Other objects and advantages of the invention will be apparent from the following specification and drawings wherein:

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

Figure 2 is a front view partly in section;

Figure 3 is a section along the line 3—3 of Figure 2;

Figure 4 is a section along the line 4—4 of Figure 2; and

Figure 5 is a section along the line 5—5 of Figure 2.

The cleaning tool herein disclosed is of the type adapted to be connected at one end of a dusting tool hose which is secured to a suction cleaner. The nozzle includes an upper body portion 10 formed of a molded resilient rubber or plastic to which is attached a lower body portion 11 forming a brush assembly. The resilient portion 10 comprises an integrally formed socket 12 having an arcuate side wall 13 and a front wall 14, both of which merge with an elongated top wall 15 having a depending peripheral side wall 16 terminating in an inwardly projecting shoulder 17 which cooperates with the side wall 16 and the adjacent edge portion 18 of top wall 15 to form a channel-shaped seat or recess 19 extending along the side wall 16.

The brush assembly 11 includes an elongated brush back or frame having a peripheral shoulder 21 from which extends a solid portion 22 of the brush back 11. Formed in the solid portion 22 and spaced from the opposite ends thereof is an air passageway 23 having a relatively large inlet 24 in the bottom face of the brush back and terminates in a restricted outlet 25 in the top of the brush back for connection with a chamber 20 in the upper body portion 10. Secured in the shoulder 21 is a brush formed of two rows of bristles 26 and 27 arranged in staggered relation so that the bristles overlap each other, and thus form an elongated opening 28 communicating with the relatively restricted inlet 24. The brush back is removably attached to the resilient

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body portion 10 by inserting the shoulder 21 in the recess 19, and is retained in position by the coaction of the flange 17 and the opposite portion 18 of the top wall 15. Depending from the top wall 15 of the body portion 10 are a plurality of spaced ribs 29 which abut the top surface 30 of the brush back.

A swivel joint 40 is provided between the socket 12 and an angular conduit 41, the latter being adapted to receive one end of an unshown hose, the opposite end of which is connected to a suction cleaner. The swivel joint comprises a pair of semi-cylindrical metal members 42 and 43, each of which has its opposite ends 44 in abutting engagement to form a cylindrical member having an outside diameter slightly larger than the inside diameter of the socket 12 so that the latter frictionally secures the members 42 and 43 against rotation. Longitudinal movement between the socket 12 and the members 42 and 43 is prevented by providing flanges 45 and 46 on the opposite arcuate ends of the members, the flanges 45 abutting a shoulder 47 on the socket 12 and the flanges 46 abutting the extreme end 48 of the socket 12.

Rotatably mounted within the members 42 and 43 is a reduced portion 49 of the conduit 41 and is provided with spaced shoulders 50 and 51 which respectively abut the flanges 45 and 46 on the members 42 and 43 to prevent longitudinal movement therebetween.

In assembling the swivel joint 40 the semi-cylindrical members 42 and 43 are arranged about the reduced conduit portion 49 between the shoulders 50 and 51 to form a cylindrical surface, and the resilient socket 12 is then stretched over the members 42 and 43 into abutment with the flanges 45 and 46 to join the parts together. In rotating the conduit 41 with respect to the nozzle the reduced conduit portion 49 rotates with respect to the two members 42 and 43 and the latter are non-rotatable due to their frictional engagement with the interior surface of the socket 12.

In using the cleaning tool air is drawn therethrough by suitable unshown suction-creating means connected to an unshown hose joined to the conduit 41. The operator moves the nozzle over the covering to be cleaned with the bristles 26 and 27 in contact with the covering to dislodge the dirt into the air stream, and the dirt-laden air stream passes through the elongated brush inlet 28, restricted nozzle inlet 24, air passageway 23 and the outlet 25 into the chamber 20, and then passes through the conduit 41.

I claim:

1. A coupling, comprising a rigid tubular member having spaced annular flanges which define therebetween an annular recess, a plurality of arcuate members each having an arcuate surface and spaced arcuate flanges to define an arcuate recess therebetween, said arcuate members nested on the exterior surface of said annular recess with said arcuate surfaces and arcuate flanges rotatably engaged respectively with said annular recess and annular flanges, and a resilent tubular member having an annular portion contoured complementary to and expanded into said arcuate recesses for retaining said arcuate members in said rotatable connection with said annular recess and annular flanges.

2. In a cleaning tool adapted to be connected to a source of suction, a nozzle body having a tubuar portion formed of resilient material, a rigid conduit extending from said nozzle body, said rigid conduit having spaced flanges defining a recess therebetween, a plurality of arcuate members each having an arcuate surface and spaced arcuate flanges to define an arcuate recess therebetween, said arcuate members nested in said conduit recess with said rigid arcuate surfaces and arcuate flanges rotatably engaged respectively with said conduit recess and conduit flanges, and said resilient tubular portion of said nozzle body expanded into said arcuate recesses for retaining said arcuate members in said rotatable connection with said conduit recess to connect said rigid conduit to said nozzle body.

3. A coupling comprising an inner rigid tubular member having an annular channel on its exterior surface, a pair of arcuate members rotatably seated in said annular channel and forming an annulus, said pair of arcuate members being channel shaped on their exterior surfaces with the flanges thereof rotatably engaging the flanges of said annular channel, and a resilient tubular member expanded into said arcuate channel members to retain said arcuate members in said annular channel and thus connect said rigid tubular member to said resilient tubular member.

4. In a suction cleaner nozzle of the type including a body of resilient material, and a tubular portion formed by the resilient material; a rigid conduit adapted to be connected to a suction source, said conduit having an annular channel on its exterior surface, a pair of arcuate channel members cooperating to form an annulus and rotatably seated in said annular channel, and said resilient tubular portion expanded into said arcuate channel members to connect said rigid conduit to said resilient tubular portion of said nozzle body.

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