

Oct. 4, 1960

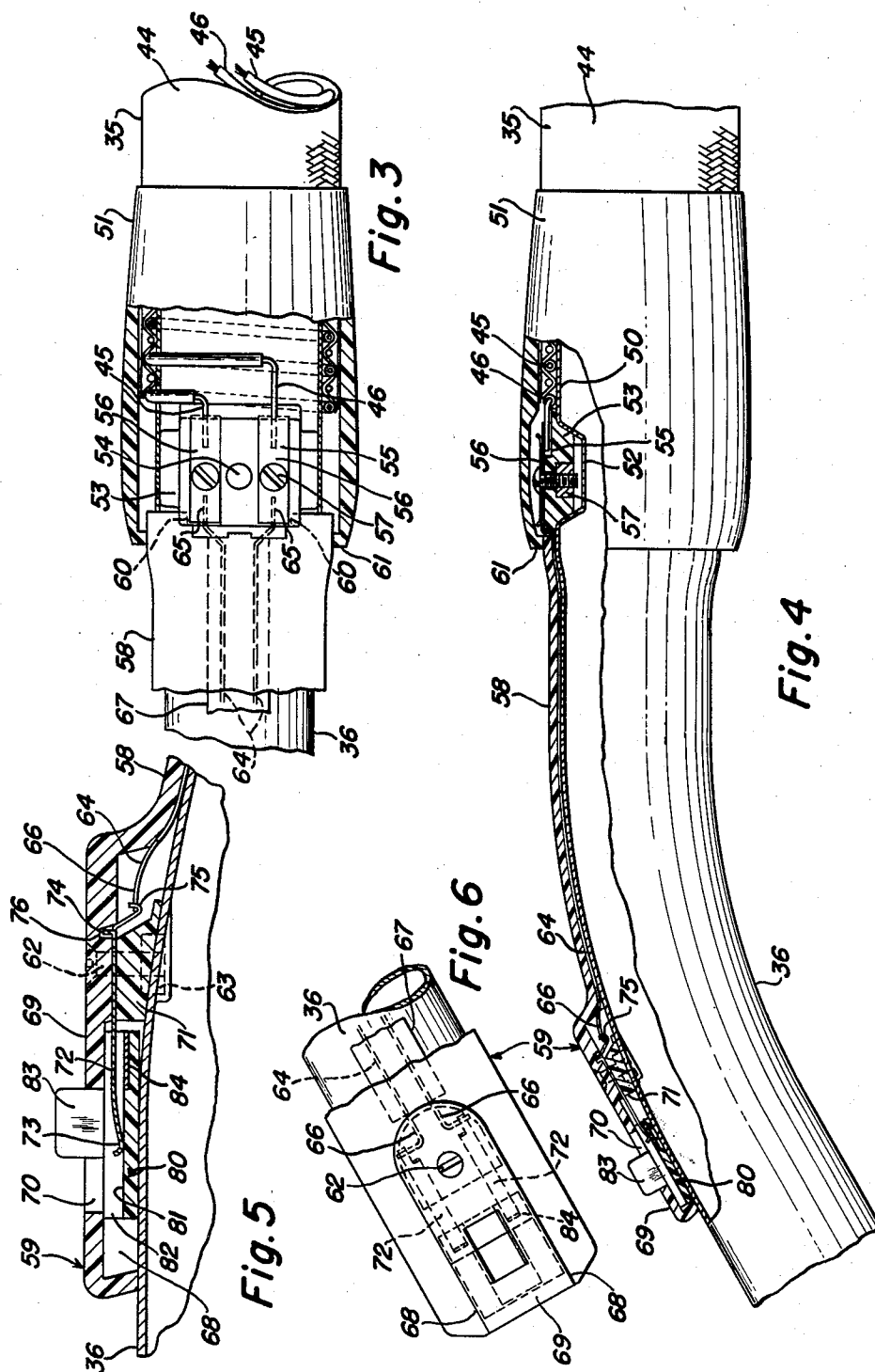
J. H. BEACH

2,955,183

ELECTRIC CURRENT CONDUCTING HOSE AND SWITCH

Filed Sept. 29, 1958

2 Sheets-Sheet 2



1

2,955,183

ELECTRIC CURRENT CONDUCTING HOSE AND SWITCH

Justice H. Beach, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Filed Sept. 29, 1958, Ser. No. 763,896

1 Claim. (Cl. 200—157)

The present invention relates to suction cleaners and more particularly to a suction cleaner hose having a switch structure at its outer end for manipulating a surface cleaning tool and controlling operation of the cleaner motor.

An object of the invention is to provide a cleaner hose with a flexible portion and a rigid wand, electrical conductors in the flexible portion and a switch on the wand, and a hand grip extending between the switch and flexible hose portion to enclose the electrical connections between the conductors and the switch. Other objects and advantages of the invention will become apparent from the following description and drawings wherein:

Figure 1 shows the hose attached to a suction cleaner,

Figure 2 is a sectional view showing the electrical connections between the hose and cleaner,

Figure 3 is a top view of the electrical connections at the flexible hose portion and rigid wand,

Figure 4 is a sectional view of the outer end of the hose and showing the switch in closed circuit position,

Figure 5 is an enlarged sectional view of the switch in open circuit position, and

Figure 6 is a top view of the switch and electrical connections.

The hose herein disclosed is adapted to be connected to a suction cleaner of the type having a supporting base 11 on which is mounted a spherical casing 12 formed in separable sections 13—14, which enclose a fan 15, motor 16 and filter bag 17. Formed in the top wall 18 of the upper casing section 14 is an air inlet opening 19 from which inwardly projects a sleeve 20 secured by a bolt 21 to the wall 18. Surrounding the sleeve 20 is a ring of sponge rubber 22 which seats against a mounting collar 23 on the filter bag 17. The mounting collar 23 has an inlet 24 communicating with the sleeve 20 and the collar 23 is supported on a suitable bracket 25, only partly shown, to align the bag inlet 24 with respect to the sleeve 20.

A pair of electrical contacts 26 is mounted by rivets 27 on a terminal block 28 and each contact has a portion 29 projecting inwardly of the sleeve 20 and another portion 30 is connected to leads 31—32 which are suitably connected to the motor 16 and the source of electric current in a manner understood in the art.

The hose 33 includes a connector 34, a flexible portion 35 and a wand 36 to which a suitable unshown surface cleaning tool can be attached. The connector 34 is formed of electric insulating material and has a portion 37 insertable in the air inlet 19. A spring latch 38 is mounted on the connector portion 37 by a rivet 39 and is provided with a hook 40 for engagement with the lip 41 of the air inlet 19 to removably secure the hose 33 in the air inlet 19. A pair of contacts 42 are mounted on the connector by screws 43 and engage the cleaner contacts 29 when the hose 33 is attached to the cleaner.

The hose portion 35 has a flexible tubular body 44 provided throughout its length with electrical conductors 45—46 which are attached to the connector contacts 42

2

by the screws 43. The tubular body 44 is suitably attached to a cylindrical portion 47 of the connector 34 and is enclosed by a protecting sleeve 48. The opposite end of the flexible hose portion 44 is secured to the inner end 50 of the wand 36 and is enclosed by a protecting sleeve 51.

The inner end 50 of the wand 36 is provided with a recessed pocket 52 in which is seated a hose terminal block 53 held in position by a rivet 54. A pair of spaced recesses 55 are provided in the upper surface of the terminal block 53 to receive the ends of the electrical conductors 45—46 extending from the flexible hose portion 44.

The conductors 45—46 are held in the spaced recesses 55 by a pair of bridging contacts 56 secured to the upper surface of the terminal block 53 by captive nuts and bolts 57.

Projecting forwardly of the sleeve 51 is a combined hand grip 58 and switch housing 59 formed of electric insulating material and is arranged along the upper surface of the wand 36. The inner end of the hand grip 58 has projecting corner portions 60 seated under the terminal block 53 to secure it to the wand 36 and is enclosed by a depending flange 61 on the protecting sleeve 51, while the switch housing 59 is removably attached to the wand by a bolt 62 and captive nut 63. The hand grip portion 58 overlies a pair of bare conductors 64 the inner ends 65 of which are secured to the hose terminal block 53 by the bridging contacts 56 and the outer ends 66 of the conductors 64 extend into the switch housing 59. The bare conductors 64 are insulated from the wand 36 by a strip of insulation 67 and the operator is protected from the bare conductors by the overlying portion of the hand grip 58 and the switch housing 59.

The switch housing 59 forms a continuation of the hand grip 58 and includes opposed side walls 68 and a top wall 69 the latter being provided with an opening 70. A supporting block 71 is disposed within the housing 59 and frictionally engages the side walls 68 whereby the housing and block 71 are secured as a unit to the wand 36 by the bolt 62 and captive nut 63. Interposed between the adjacent surfaces of the block 71 and the switch housing top wall 69 are a pair of downwardly biased leaf spring contacts 72 each having a contact engaging portion 73 projecting forwardly of the block 71 and having a rear portion provided with an upstanding locking tab 74 and a depending end 75. Each of the locking tabs 74 are arranged in a recess 76 in the under surface of the top wall 69 of the switch housing 59 to position the contacts 72 prior to inserting the block 71 in the housing 59 for attachment to the wand 36. The ends 75 of the contacts 72 are clamped or soldered to the outer ends 66 of the bare conductors 64.

Slidably disposed within the switch housing 59 is a member 80 having a base 81 from which upwardly extends a projection 82 of reduced cross section and the latter is provided with an upstanding button 83 passing through the housing opening 70 for manipulation by the operator. The base 81 is of such size as to slidably engage the side walls 68 of the switch housing 59 and the combined height of the projection 82 and base 81 is such as to respectively slidably engage the top wall 69 of the housing and the wand 36, whereby the member 80 is confined between the switch housing 59 and the wand 36. Extending across one end of the base 81 and below the projection 82 is a single contact 84 which is engageable with the spring contacts 72 to close the circuit to the cleaner motor 16 when the hose connector 34 is inserted in the sleeve 20. The width of the projection 82 on the base 81 is greater than the opening 70 whereby access cannot be had to the contacts 72 and 84 through the opening 70.

When it is desired to put the cleaner into operation the connector 34 is inserted in the sleeve 20 to place the contacts 42 into engagement with the cleaner contacts 29. The operator then places his hand about the grip 58 and moves the switch button 83 from the "off" position in Figure 5 to the "on" position in Figure 4 to bring the contact 84 into engagement with the contacts 73 to thereby close the circuit to the cleaner motor 16 which then operates the suction creating fan 15. A suction air stream travels through the cleaning tool attached to the wand 36 to remove dirt from the surface being cleaned and the dirt is collected in the bag 17 prior to discharge through a suitable opening in the casing 12 to the atmosphere. The motor 16 is de-energized by shifting the button 83 to the "off" position shown in Figure 5 whereby the contact 84 is disengaged from the contacts 73 and the latter rest upon the insulated base 81 of the member 80.

While I have shown and described but one embodiment of my invention, it is to be understood that this embodiment is to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structure shown and described but to include all equivalent variations except as limited by the scope of the claim.

I claim:

In a hose of the type having a flexible portion provided at one end with a rigid wand to which a cleaning tool may be attached and at the opposite end having a connector for attachment to a suction cleaner, that im-

provement which comprises a pair of electrical conductors extending along said flexible hose portion, a terminal block mounted on said wand adjacent said one of said flexible hose portion, means connecting said conductors to said terminal block, a switch on said wand in spaced relation to said terminal block longitudinally along said wand, said switch including a movable operating member provided with a contact and a pair of stationary contacts on the exterior of said wand, a pair of electrical leads connecting said terminal block and stationary switch contacts and arranged exteriorly along the surface of said wand, a cover of electric insulating material secured to and partially enclosing said wand and extending from said terminal block to said switch, said cover overlying said leads and cooperating with the adjacent uncovered portion of said wand to provide a grip for the operator's hand for manipulating said wand and said movable switch contact, and means defining a recess on the exterior surface of said wand adjacent said one end of said flexible hose portion and in which said terminal block is mounted, and an insulating sleeve enclosing said terminal block and said adjacent end of said hose.

References Cited in the file of this patent

UNITED STATES PATENTS

2,778,531	Lauer	Jan. 22, 1957
2,840,673	Burton	June 24, 1958