

June 24, 1941.

D. G. SMELLIE

2,246,862

SUCTION CLEANER

Filed Aug. 6, 1937

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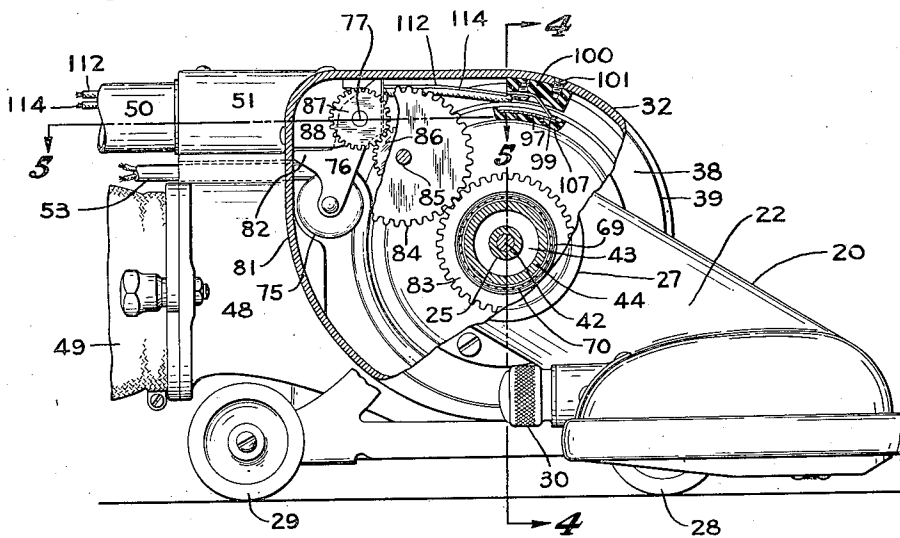
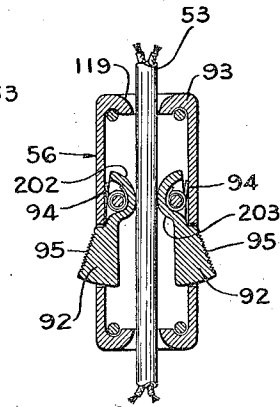
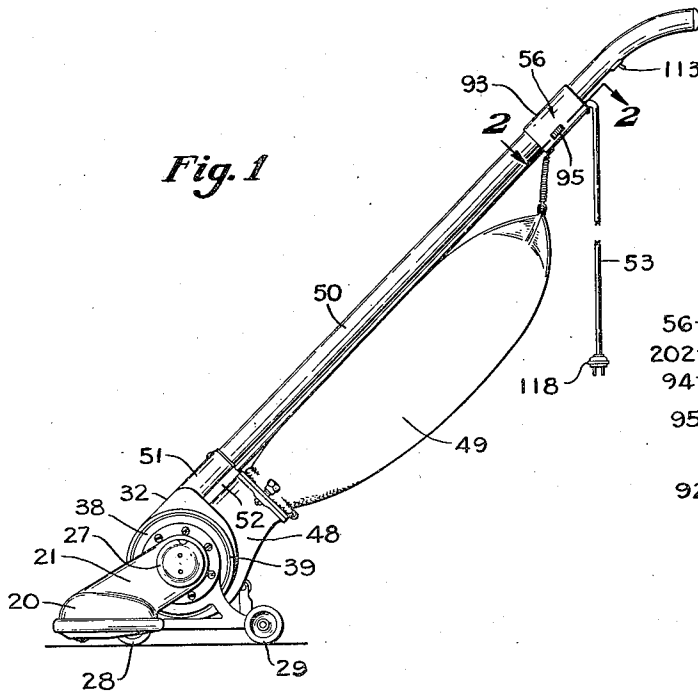


Fig. 3

INVENTOR
Donald G. Smellie

BY

Harry S. Dumas
ATTORNEY

June 24, 1941.

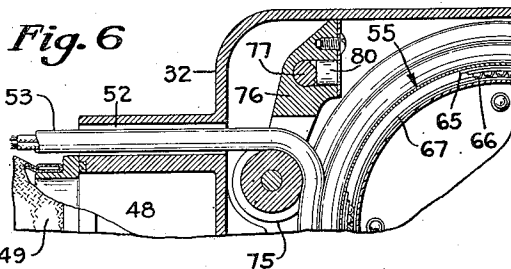
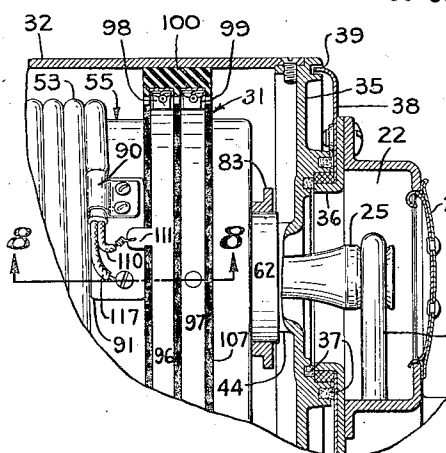
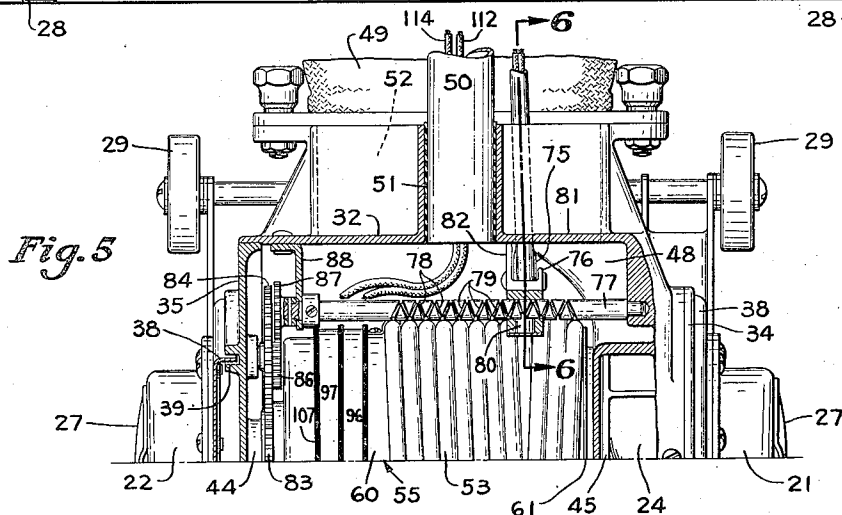
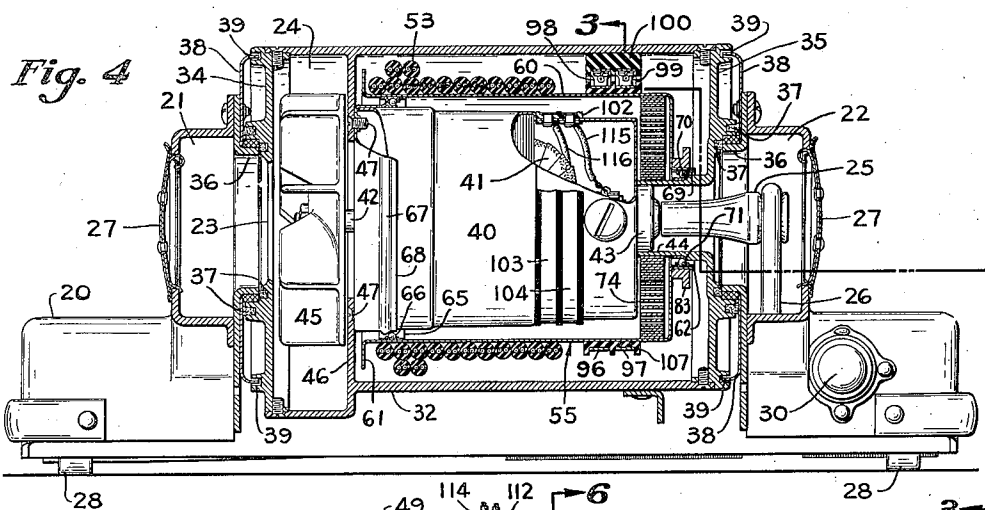
D. G. SMELLIE

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4 Sheets-Sheet 2



INVENTOR

Donald G. Smellie

BY

Harry S. Demaree

ATTORNEY

June 24, 1941.

D. G. SMELLIE

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SUCTION CLEANER

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4 Sheets-Sheet 3

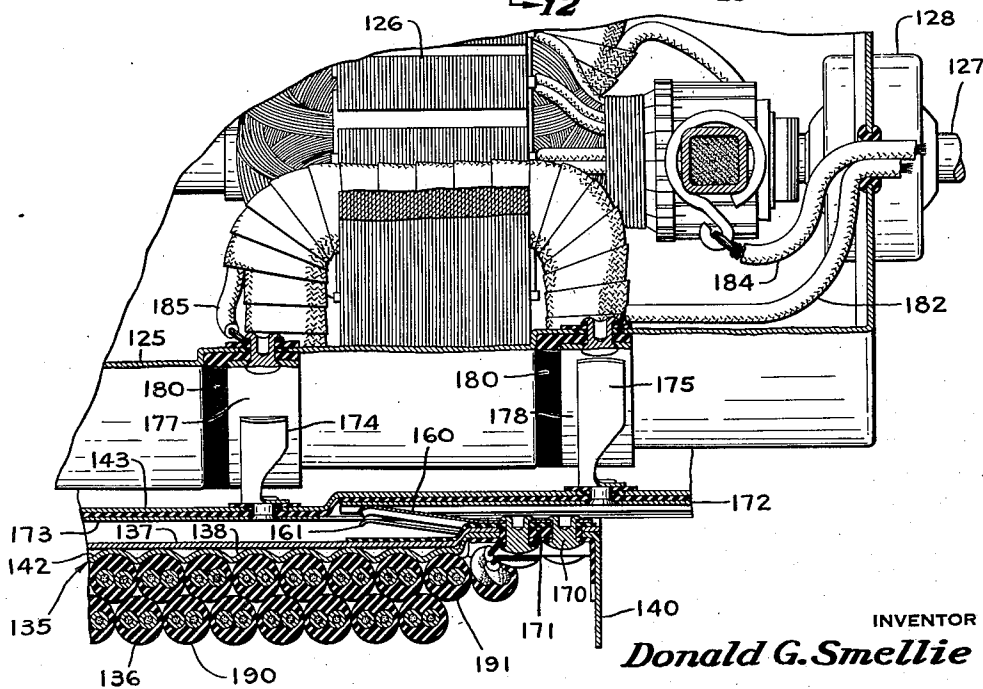
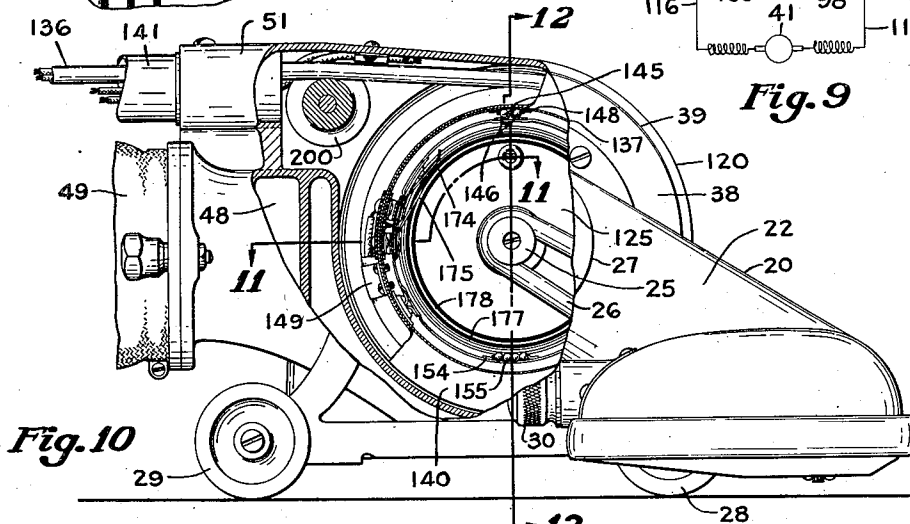
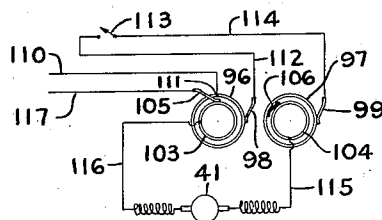
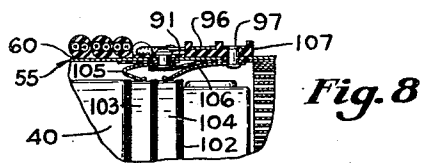


Fig. 11

BY

Harry S. Demaree

INVENTOR

Donald G. Smellie

ATTORNEY

June 24, 1941.

D. G. SMELLIE

2,246,862

SUCTION CLEANER

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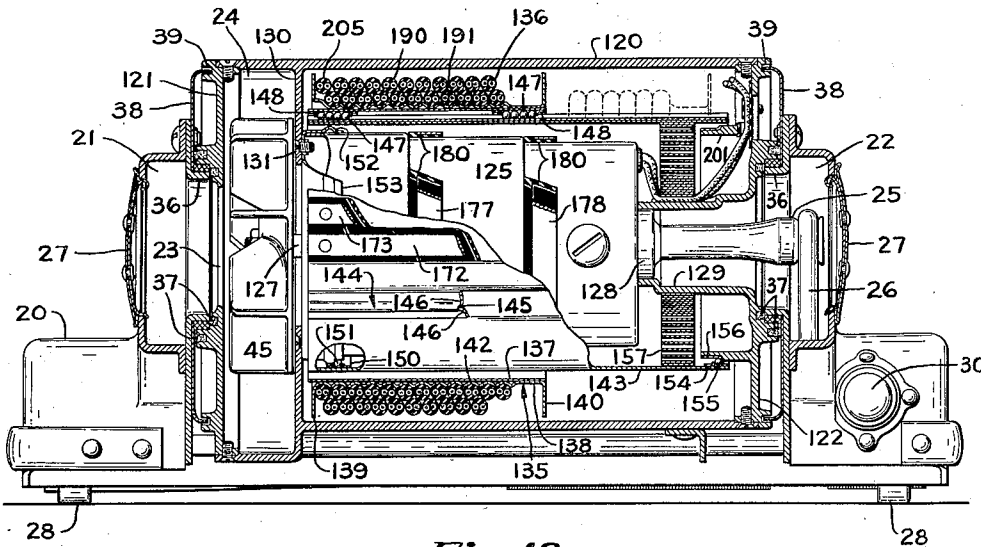


Fig. 12

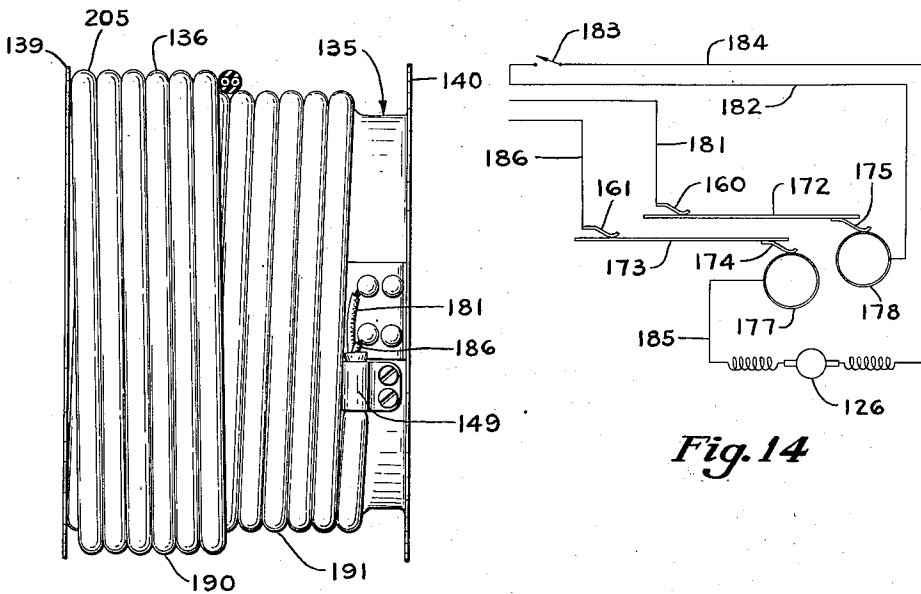


Fig. 13

Fig. 14

INVENTOR

Donald G. Smellie

BY

Harry S. Dumas

ATTORNEY

UNITED STATES PATENT OFFICE

2,246,862

SUCTION CLEANER

Donald G. Smellie, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Application August 6, 1937, Serial No. 157,701

21 Claims. (Cl. 15-16)

This invention relates to suction cleaners in general, and more particularly to cord take-up devices to pick up the slack and house the electric cord which conveys current to the cleaner motor from a source of current supply.

An object of the invention is to provide a reel for taking up the slack in the conductor cord of a device of this type. A further object is to provide a reel concentric with the motor housing and which will not materially detract from the appearance of the machine as a whole. Another object is to provide a reel which is concentric with and rotatable about the cleaner motor housing to wind and unwind the conductor cord. Another object is to provide a reel movable in rectilinear and arcuate paths with respect to the motor housing to effect reeling and unreeling of the conductor cord. A further object is to provide a new and improved type of reel commutator to convey current to the motor. Other objects will be apparent from the following description of the embodiments of the invention shown in the accompanying drawings, in which:

Fig. 1 is a side elevation of a suction cleaner including an embodiment of the invention;

Fig. 2 is an enlarged section taken along the line 2-2 of Fig. 1, and showing a cord clamping means;

Fig. 3 is a section partly in elevation along the line 3-3 of Fig. 4;

Fig. 4 is a section partly in elevation along the line 4-4 of Fig. 3;

Fig. 5 is a section along the line 5-5 of Fig. 3;

Fig. 6 is a section along the line 6-6 of Fig. 5;

Fig. 7 is a fragmentary sectional view of the means for conveying current to the cord reel;

Fig. 8 is a section along the line 8-8 of Fig. 7 showing the means for conveying current from the cord reel to the motor;

Fig. 9 is a diagram of the electric circuit;

Fig. 10 is a sectional view partly in elevation of another embodiment of the invention, illustrating another form of cord reel;

Fig. 11 is an enlarged section along the line 11-11 of Fig. 10, showing means for conveying current from the cord reel to the motor;

Fig. 12 is a section along the line 12-12 of Fig. 10;

Fig. 13 is an elevation of the cord reel; and

Fig. 14 is a diagram of the electric circuit.

Referring to Figures 1 to 9, a suction cleaner embodying one embodiment of the invention is disclosed. The cleaner comprises a body having a nozzle 20 communicating with two rearwardly extending passageways 21 and 22, the passage-

way 21 opening directly to the eye 23 of a fan chamber 24, while the passageway 22 extends to a motor driven pulley 25 supporting a belt 26 extending through the passageway 22 to a rotary agitator, not shown, in the mouth of the nozzle 20. Both passageways are provided at their ends with removable cap members 27, 27. The machine is supported by front and rear wheels 28 and 29 respectively, the former being provided with height adjusting means 30 for the purpose of raising and lowering the mouth of the nozzle relative to the surface covering undergoing cleaning.

The fan chamber 24 is integral with and forms a part of a housing 32 provided with removable side walls 34 and 35 which are rotatively seated upon circular flanges 36, 36 formed upon the inner walls of the passageways 21 and 22 so that the housing may be rotated about a horizontal axis. Suitable seals 37, 37 are provided to render the joints air tight. False side members 38, 38 are carried by the passageways 21 and 22 and are formed with peripheral flanges which extend into circular channels 39, 39 of the housing to cover the sealed joints and to improve the appearance of the machine.

Disposed within and concentric with the housing 32 is a motor casing 40 enclosing a motor 41 provided with an armature shaft 42 one end of which is journaled in a suitable bearing 43 supported by the inwardly extending boss 44 formed integrally with the side wall 35. One end of the armature shaft 42 carries the motor pulley 25 and the opposite end carries a fan 45 disposed in the fan chamber 24. The motor casing 40 is rigidly secured by means of screws 47 to an inwardly extending annular rib 46 of the housing 32, the rib 46 also forming the inner wall of the fan chamber 24, the outer wall thereof being defined by the removable plate 34. The fan chamber 24 communicates with an exhaust passage 48 formed in the housing 32 and is suitably connected to the lower end of a dust filtering bag 49. A cleaner handle 50 is rigidly carried by the outer housing 32 in a rearwardly opening socket 51 formed integrally thereon. From the foregoing it will be perceived that the motor casing 40 and the housing 32 are concentric with respect to each other, and are both rotated as a unit when the handle is swung in a vertical plane during operation of the cleaner.

My improved cord reel 55 may be formed of sheet metal and is interposed between and is concentric with the motor casing 40 and the outer housing 32. The reel 55 comprises a cylin-

drical cord receiving drum 60 one end of which is provided with an annular flange 61 and the opposite end is reduced as at 62. Four ball bearing housings 65 are equally spaced about and secured to the inner surface of the drum 60 for housing ball bearings 66 which rotate about an annular race 67 forming part of the motor end cap 68. An annular ball bearing housing 69 is secured to the reduced end 62 of the reel 55 for ball bearings 70 which travel along the annular race 71 secured to the boss 44 of the side wall 35. A contractile helical coil spring 74 has one end suitably anchored to the boss 44, while the other end is anchored to the reel 55, to rotate the latter in counter clockwise direction, as viewed in Fig. 3, tending to wind the cord on the reel.

In order to wind the cord in uniform layers about the reel I have provided a cord guiding means comprising a cord wheel 75 journaled in a follower 76 supported on a rotatably mounted shaft 77 provided with opposed double threads 78, 79 which are separately engaged by a shoe 80 carried on the follower 76. Engagement of the shoe 80 with one of the double threads on the rotating shaft 77 causes the follower 76 to move in one direction parallel to the axis of the reel to guide one layer of cord on the reel, and thereafter the shoe 80 engages the other double thread and causes the follower 76 to move in the opposite direction to coil the next layer of cord on the reel. Rotation of the reel causes the shaft 77 to be rotated by means of a gear 83, mounted on the reduced portion 62 of the reel, and is in mesh with a gear 84 carried on a shaft 85 supported by the side wall 35, the shaft 85 also carries a smaller gear 86 in mesh with another gear 87 fixed to the threaded shaft 77 which is rotatably supported at its opposite ends in a bracket 88 and the housing 32. The pitch of each thread 78 and 79 is equal to the diameter of the cord 53 so that the latter will be uniformly spaced on the reel 55. As shown in Fig. 3 the follower 76 has a projecting portion 82 which engages the rear wall 81 of the housing 32 and thereby prevents the follower from rotating but permits it to slide along the rear wall 81 of the housing.

The fixed end of the cord 53 is anchored to the reel 55 by means of a clamp 90 which is suitably insulated from the reel by an insulating member 91. The uncoiled portion of the cord 53 extends through a relatively wide opening 52 of the housing 32 and then between the cooperating finger clamps 92, 92 pivotally supported in the casing 93 of a cord clamping device 56. Springs 94, 94 tend to swing the clamps into cord locking position to hold the cord in paid out position. Each clamp is provided with a cam surface, a portion 202 thereof acting as a brake on the cord and another portion 203 permitting the cord to be pulled therepast. Finger engaging portions 95 of the clamps 92 extend through slots in the casing 93 and are adapted to be engaged by the operator's fingers to pivot the clamps releasing the grip of the latter on the cord, permitting the spring 74 to rotate the reel 55 and wind the cord thereon.

A ring 31, of insulating material, is rigidly mounted around the reel 55 and is provided with annular grooves for receiving collector rings 96 and 97 which respectively slidably engage leaf spring contacts 98 and 99 mounted on an insulated block 100 fixedly secured to the housing 32 by means of a screw 101. Disposed about the

motor housing 40 is an insulating ring 102 provided with annular grooves in which is fixedly mounted a pair of collector rings 103 and 104 which are respectively slidably engaged by leaf spring brushes 105 and 106 secured to the rotatable reel 55 and properly insulated therefrom.

As shown in Figure 9 the motor circuit includes one of the feed wires 110 of the cord 53 connected to a tab 111 of the collector ring 96 which slidably engages the brush 98 connected to the conductor 112 extending upwardly in the handle 50 to one side of the switch 113, the other side of the switch is connected to a conductor 114 leading to the brush 99 slidably engaging the collector ring 97 which is electrically connected to the brush 106 slidably engaging the collector ring 104 in turn electrically connected to a lead wire 115 to the motor 41. From the motor 41 a lead wire 116 is connected to the collector ring 103 which is slidably engaged by brush 105 electrically connected to the other feed wire 117 of the cord 53 to complete the electric circuit for the motor.

In the operation of the device, assume the cord 53 is wound about the reel 55 with the plug 118 disposed in the substantially complementary opening 119 of the cord controlling case 93. When it is desired to unwind the cord the operator pulls on the latter and causes the clamps 92 to rotate into the casing 93 out of binding engagement with the cord thereby enabling the operator to easily unreel the cord and rotate the reel. Rotation of the reel 55 is transmitted by the train of gears to cause rotation of the threaded shaft 77 which causes the cord reeling guide 76 to travel along one of the double threads in a rectilinear path parallel to the axis of the reel so as to uniformly uncoil the outer layer of cord. When the outer layer of cord is completely unwound, the shoe 80 engages the other double thread and causes the follower 76 to travel in the opposite direction to uniformly unwind each coil of the inner layer of cord. After the required amount of coil has been paid out the operator ceases to exert a pull on the cord, whereby the clamps 92 are immediately urged into cord clamping position by the springs 94. When it is desired to wind the cord on the reel 55 the cord clamps 92 are manipulated to release the brake on the cord 53 which permits the spring 74 to freely function to rotate the reel relatively with respect to the motor casing 40 and housing 32 to wind the cord thereon. Rotation of the reel 55 causes the cord reeling guide 76 to traverse one of the double threads on the shaft 77 to wind each coil of the inner layer of cord uniformly on the reel and thereafter the follower 76 travels in the reverse direction due to engagement with the other thread to uniformly coil the outer layer of cord. The wide cord opening 52 in the housing 32 permits the cord to move with the coil reeling guide 76 as the latter travels along the shaft 77.

Another embodiment of the invention is shown in Figures 10 to 14 and may be employed in the type of suction cleaner shown in Fig. 1, including a nozzle 20, side passages 21 and 22, fan chamber 24, belt pulley 25 and belt 26. In this embodiment the outer housing 120 is provided with removable side walls 121 and 122 which are rotatably mounted on the circular flanges 36, 36 formed upon the inner walls of the passageways 21 and 22 and is also provided with an exhaust outlet 48 communicating with the fan chamber 24 and with a dust filter bag 49. A handle 141

is rigidly secured in a socket 51 in the housing 120.

Disposed within the outer housing 120 is a motor casing 125 enclosing a motor 126 having an armature shaft 127, one end of which is journaled in a bearing 128 supported within an inwardly extending boss 129 formed integral with the side wall 122. The motor casing 125 is rigidly secured, by means of screws 131, to an inwardly extending rib 130 of the housing 120. Accordingly it is apparent that swinging movement of the handle 141 during operation of the cleaner causes the motor casing 125 to move with the housing 120 as the latter rotates about the circular flanges 36 of the passageways 21 and 22 in the nozzle 20.

In this embodiment the cord reel 135 is movable in a rectilinear path and is rotatably concentrically mounted with respect to the motor casing 125 and the cleaner housing 120. The reel moves in a rectilinear path parallel to the axis of the motor as the cord 136 is wound or unwound, so as to at all times maintain the point of cord application to the reel in alignment with the center of the handle through which the cord passes. As the cord is wound or paid out, the reel is caused to move in the proper rectilinear direction due to the friction developed between the adjacent coils as they are applied or removed from the reel during rotation of the latter.

The reel 135 is provided with a cylindrical supporting member 137 on which is fixedly mounted a hub 138 terminating at its ends in outwardly extending annular flanges 139 and 140. The hub 138 is provided with a helical groove 142 extending from a point short of the flange 140 to the other flange 139 to receive the first layer of cord. The inner layer 191 of the cord is wound in the helical groove 142 to the end flange 139, the latter causes the cord to climb therealong to form the outer layer 190 which is wound in a helix in the reverse direction due to the rectilinear movement of the reel 135, as shown in Fig. 13.

For the purpose of reducing friction so that the reel 135 will move easily in a rectilinear direction, a bearing structure including an elongated cylinder 143 is interposed between the motor casing and the reel 135. Rigidly secured to and extending longitudinally along the outer surface of the cylinder 143 is a plurality of spaced tracks or ball races 144 having an upwardly extending rib 145 to provide double races 146, 146 for groups of ball bearings 147 carried in suitable ball housings 148 arranged at opposite ends of the reel member 137. The cylinder 143 is substantially twice the transverse length of the helical groove 142 so that as the reel 135 travels to the right to the dotted line position, as viewed in Figure 12, one layer of cord is completely paid out. The cord 136 is secured to the reel by a clamp 149 properly insulated as shown in Figures 10 and 13, and passes over a pulley 200 rigidly attached to the housing 120 in alignment with the handle, and upwardly in the latter through the cord controlling device 56, suitably secured to the handle 141.

Mounted at one end of the rotating cylinder 143, is a plurality of spaced ball bearing housings 150, each accommodating a group of ball bearings 151 which engage an annular race 152 formed on the end cap 153 of the motor casing 125. At the opposite end of the cylinder 143 is a plurality of spaced ball bearing housings 154, each accommodating a group of ball bearings 155 which engage an annular race 156 mounted on

an inwardly extending boss 201 of the housing side wall 122. A contractile spring 157 has one end suitably anchored to the boss 129 and the other end attached to the rotating cylinder 143, to at all times provide the energy required to rotate the cylinder 143 and thus the reel 135.

Commutation of current between the reel 135 and the motor casing 125 is effected by means of a pair of leaf spring brushes 160 and 161 secured to the reel by means of rivets 170 and insulated therefrom as indicated at 171. The brushes 160 and 161 respectively slidably engage conductor bars 172 and 173 insulatably mounted longitudinally along the outer surface of the cylinder 143. Another pair of leaf spring brushes 174 and 175 are insulatably mounted on the inner surface of the cylinder 143 and respectively engage collector rings 177 and 178 insulatably mounted on the motor casing 126, as indicated at 180.

As shown in Figure 14 the circuit for the motor comprises one of the feed wires 181 of the cord 136 connected to the brush 160 slidably engaging the conductor bar 172 connected to the brush 175 slidably engaging the rotatable collector ring 178 connected to a conductor 182 extending upwardly in the handle to one side of the switch 183 mounted on the handle. The other side of the switch is connected to a conductor 184 extending to the motor 126 connected to a lead wire 185 secured to the collector ring 177 which is slidably engaged by the brush 174 connected to the bar 173 slidably engaged by the brush 161 connected to the other feed wire 186 of the conductor cord 136, to complete the motor circuit.

In the operation of the device, assume that the cord is wound about the reel 135 and the latter is in the full line position shown in Fig. 12. To unwind the cord the operator exerts a pull on the cord causing the reel 135 and cylinder 143 to rotate as a unit. As the cord is paid out the reel 135 progressively moves in a rectilinear path along the cylinder 143 to unwind the cords at all times centrally of the handle 141. The reel is caused to move in a rectilinear path since the outer layer 190 of the cord is wound in a helix, and the friction developed between the cord as it is paid out and the wound coils, as viewed in Fig. 12, together with the natural tendency of the cord to follow a straight line, is sufficient to cause the reel to move to the right in a rectilinear path. When the outer layer of cord 190 is completely unwound the reel 135 will have reached its limit of travel to the right, indicated in dotted lines in Figure 12. As the inner layer 191 of the cord is unwound the reel 135 travels in the reverse direction in a rectilinear path to the left, from the dotted line position as viewed in Figure 12. The reel is caused to travel in this reverse rectilinear direction due to the friction between the coil being unwound and the helical groove 142, and this unwinding will take place along a line coincident with the central axis of the handle 141. Due to the ball bearings 151 and 155 the cylindrical reel track 143 will rotate with a minimum of friction, and the cord reel 135 will easily move parallel to the cylinder 143 because of the ball bearings 147 running along the races 146. When a pull is no longer exerted on the cord the cord control clamps 92 operate to hold the cord in paid out position.

When it is desired to rewind the cord, the cord clamps are manipulated to release the brake on the cord, whereby the spring 157 operates to rotate the reel 135 and the cylindrical track 143. The reel 135 will move in a rectilinear direction

along the track 144 since the cord is being wound in the helical groove 142, and accordingly the point of cord application on the rotating reel will at all times be along a line centrally of the handle 141. When the first layer 191 of the cord has been completely wound about the reel the first coil 205 of the next layer 190 will climb the flange 139 and be wound in a helix reverse to the first layer 191 of the cord and with a lead in the opposite direction and cause the reel 135 to move in reverse rectilinear direction. Upon releasing the cord clamps 92 the latter act as a brake on the cord to overcome the force exerted by the spring 157 tending to rotate the reel 135, to thereby stop the latter.

During the rectilinear and rotatable movement of the reel 135 the brushes 160 and 161 slide in a rectilinear path along the conductor bars 172 and 173, and the brushes 174 and 175 slide in a circular path along the collector rings 177 and 178 to supply the motor with current.

I claim:

1. A suction cleaner, comprising an ambulatory body, a casing rotatably supported by said body, a motor supported in said casing, a handle rigidly carried by said casing, an electric cord slidably carried by said handle, a cord reel disposed between said casing and motor and rotatable with respect to the latter to take up said cord, means for rotating said reel, and contact means for electrically connecting said cord with said motor.

2. The combination with an electrically operated portable device having a motor, of a cord for supplying current to the motor, and a cord take-up about the motor axis and movable in rectilinear and arcuate paths with respect to the motor for taking up said cord.

3. The combination with an electrically operated portable device having a motor, of a cord for supplying current to said motor, and a cord take-up including a member concentric and rotatable with respect to said motor, and a reel concentrically mounted on said member, said reel movable in a rectilinear path with respect to said supporting member and rotatable therewith to effect winding and unwinding of said cord.

4. The combination with an electrically operated portable device having a motor, of a cord for supplying current to said motor, a housing for said motor, a cord take-up including a member concentric and rotatable with respect to said motor housing, and a reel concentrically mounted on said member, said reel movable in a rectilinear path with respect to said supporting member and rotatable therewith to effect winding and unwinding of said cord, and commutation means comprising annular contacts carried by said housing, brush contacts carried by said supporting member to slidably engage said annular contacts, contact bars carried by said supporting member, and brush contacts carried by said reel to slidably engage said bar contacts.

5. The combination with an electrically operated portable device having a handle, of a current-supplying cord slidably mounted along said handle, and a cord take-up including a reel for said cord, said reel rotatably mounted on an axis transverse to the axis of said handle and movable in a rectilinear path parallel to its rotating axis to at all times apply said cord on said reel at a point in line with said handle.

6. The combination with an electrically operated portable device having a handle, of a cur-

rent-supplying cord slidably mounted along said handle, and a cord take-up including a reel having a helical groove for receiving the first layer of said cord, means for rotating said reel about an axis transverse to the longitudinal axis of said handle to effect winding of said cord thereon, said reel being movable in a rectilinear path parallel to its rotative axis to at all times apply said cord on said reel at a point in line with said handle, said reel moving in said rectilinear path due to the friction developed between said helical groove and said cord as it is progressively coiled on said reel during rotation of the latter.

7. The combination with an electrically operated device having a handle, of a current-supplying cord slidably mounted along said handle, and a cord take-up including a reel for receiving a plurality of layers of said cord, means for rotating said reel about an axis transverse to the longitudinal axis of said handle to effect winding of said cord thereon, means on said reel providing a helical groove for the first layer of cord and terminating in a flange to cause the coiling of a second layer of said cord in a helix reverse to said first layer of cord, said reel being movable in a rectilinear path during winding of said second layer of cord due to the friction developed between the paid out cord and the adjacent coil on said reel to thereby at all times apply said second layer of cord on said reel at a point in line with said handle.

8. A cord take-up device comprising a rotatably mounted reel having a helical groove to receive a cord thereon, spring means for rotating said reel to wind said cord thereon, said reel being movable in a rectilinear path to at all times apply said cord on said reel at a point fixed with respect thereto, said reel moving in said rectilinear path due to the friction developed between said helical groove and said cord as it is progressively coiled on said reel during rotation of the latter.

9. In a suction cleaner of the type having an ambulatory body and a handle pivoted relative thereto upon a transverse axis, current conducting means slidably carried by said handle and extended downwardly to said body, and a take-up rotatably carried by said body and concentric with the pivotal axis of said handle for reeling and unreeling said current conducting means to maintain a constant length of the latter between said handle and the point of application of said conducting means on said take-up.

10. In a suction cleaner of the type having an ambulatory body and a handle pivoted relative thereto upon a transverse axis, current conducting means carried by said handle and extended downwardly to said body, a take-up rotatably carried by said body and concentric with the pivotal axis of said handle for reeling and unreeling said current conducting means to maintain a constant length of the latter between said handle and the point of application of said conducting means on said take-up, and a casing for said take-up fixed to said handle and mounted for movement therewith.

11. In a suction cleaner, an ambulatory body, suction creating means including a motor, fan and casing therefor pivotally mounted upon said body, a cord take-up mounted for pivotal movement relative to said body upon the pivotal axis of said motor and fan for reeling and unreeling a current carrying cord, and a handle mounted for pivotal movement relative to said body to maintain a constant length of said cord between

the handle and point of application of said cord on said take-up.

12. A suction cleaner, comprising an ambulatory body, a casing rotatably supported by said body and having means to support a motor within said casing, a motor housing about said motor, a cord reel rotatably mounted on said housing and disposed between said casing and housing, an electric cord slidably carried by a handle and wound about said reel, contact means carried by said motor housing, and additional contact means carried by said reel and rotatable with respect to said first mentioned contact means to electrically connect said cord with said motor, said handle being rigidly connected to said casing to rotate the latter with respect to said body and reel to maintain a constant length of said electric cord between said handle and the point of application of said cord on said reel.

13. A suction cleaner, comprising an ambulatory body, a casing rotatably supported on said body, a motor supported within said casing, a cord reel rotatably mounted between said casing and motor, an electric cord slidably carried by a handle and wound about said reel, means tending at all times to rotate said reel in one direction to wind said cord thereon, relatively movable contact means for electrically connecting said cord to said motor, said handle being rigidly connected to said casing to rotate the latter with respect to said body and reel during the operation of said cleaner to maintain a constant length of said cord between said handle and the point of application of said cord on said reel, and manually operable means carried by said handle to limit the movement of said cord under winding impetus of said reel.

14. A suction cleaner, comprising an ambulatory body, a casing rotatably supported on said body, a motor supported within said casing, a cord reel rotatably mounted between said casing and motor, an electric cord slidably carried by a handle and wound about said reel, means tending at all times to rotate said reel in one direction to wind said cord thereon, means to guide said cord in layers around said reel, relatively movable contact means for electrically connecting said cord to said motor, said handle being rigidly connected to said casing to rotate the latter with respect to said body and reel during the operation of said cleaner to maintain a constant length of said cord between said handle and the point of application of said cord on said reel.

15. In a suction cleaner, an ambulatory chassis, a motor carrier by said chassis, a casing enclosing said motor and pivotally supported on said chassis, a handle rigidly carried by said casing for pivoting the latter about its pivotal axis, a cord take-up interposed between said motor and casing and rotatably mounted coincidental to the pivotal axis of said casing, and a current conducting cord connected to said motor and carried by said take-up.

16. In a suction cleaner, an ambulatory chassis, a motor carried by said chassis, a casing enclosing said motor and pivotally supported on said chassis, a handle rigidly carried by said casing for pivoting the latter about its pivotal axis, a cord take-up interposed between said motor and casing and rotatably mounted coincidental to the pivotal axis of said casing, a current conducting cord wound upon said take-up and slid-

ably mounted on said handle, means connecting said cord to said motor, and cord locking means on said handle.

17. In a suction cleaner, an ambulatory chassis, a motor supported on said chassis, a casing rotatably mounted on said chassis, a handle for rotating said casing with respect to said chassis when said handle is oscillated to propel the cleaner over the surface being cleaned, a reel rotatably mounted in said casing, a current-conducting cord wound upon said reel and connected to said motor, and a cord slot in said casing for guiding said cord with respect to said reel, said cord slot moving with said casing with respect to said reel to guide the winding and unwinding of said cord with respect to said reel.

18. In a suction cleaner, an ambulatory chassis, a motor supported on said chassis, a casing rotatably mounted on said chassis, a handle for rotating said casing with respect to said chassis when said handle is oscillated to propel said cleaner over the surface being cleaned, a reel rotatably mounted in said casing, a current-conducting cord extending along said handle and wound upon said reel and connected to said motor, means tending to rotate said reel to wind the cord thereon, means on said handle to limit the movement of said cord under the winding impetus of said reel, and a cord slot in said casing for guiding said cord with respect to said reel to guide the winding and unwinding of said cord with respect to said reel.

19. In a suction cleaner, an ambulatory chassis, a motor mounted on said chassis with its axis extended transversely to the direction of movement of said ambulatory chassis, a rigid support extended from one side of said motor, a rotatable cord take-up reel rotatably mounted on said support, resilient means to rotate said reel on said support, a current-conducting cord wound upon said reel, and means to conduct current from said conductor to said motor in all rotational positions of said reel.

20. In a suction cleaner, an ambulatory chassis, a motor mounted on said chassis with its axis extended transversely to the direction of movement of said ambulatory chassis, a rigid support extended from one side of said motor, a rotatable cord take-up reel rotatably mounted on said support, spring means between said support and said reel tending to rotate the latter in one direction, current-conducting means electrically connecting said reel to said motor in all rotational positions of the former, a current-conducting cord connected to and wound upon said reel, and manually operable means to control the winding of said cord upon said reel.

21. In a suction cleaner, an ambulatory chassis, a suction creating unit including a body pivotally mounted on said chassis and housing a motor and fan, a cord take-up within said body comprising a reel and a spring, one end of said spring being connected to said body and the other end to said reel, a handle connected to said body and adapted to pivot therewith on said chassis, a cord connected to said reel and extending outwardly through said body, means electrically connecting said cord to said motor, said handle and body and reel pivoting freely as a unit relative to said chassis whereby the tension of said spring is not varied in said pivotal movement.

DONALD G. SMELLIE.