Feb. 1, 1944. P. T. HAHN 2,340,379

SUCTION CLEANER

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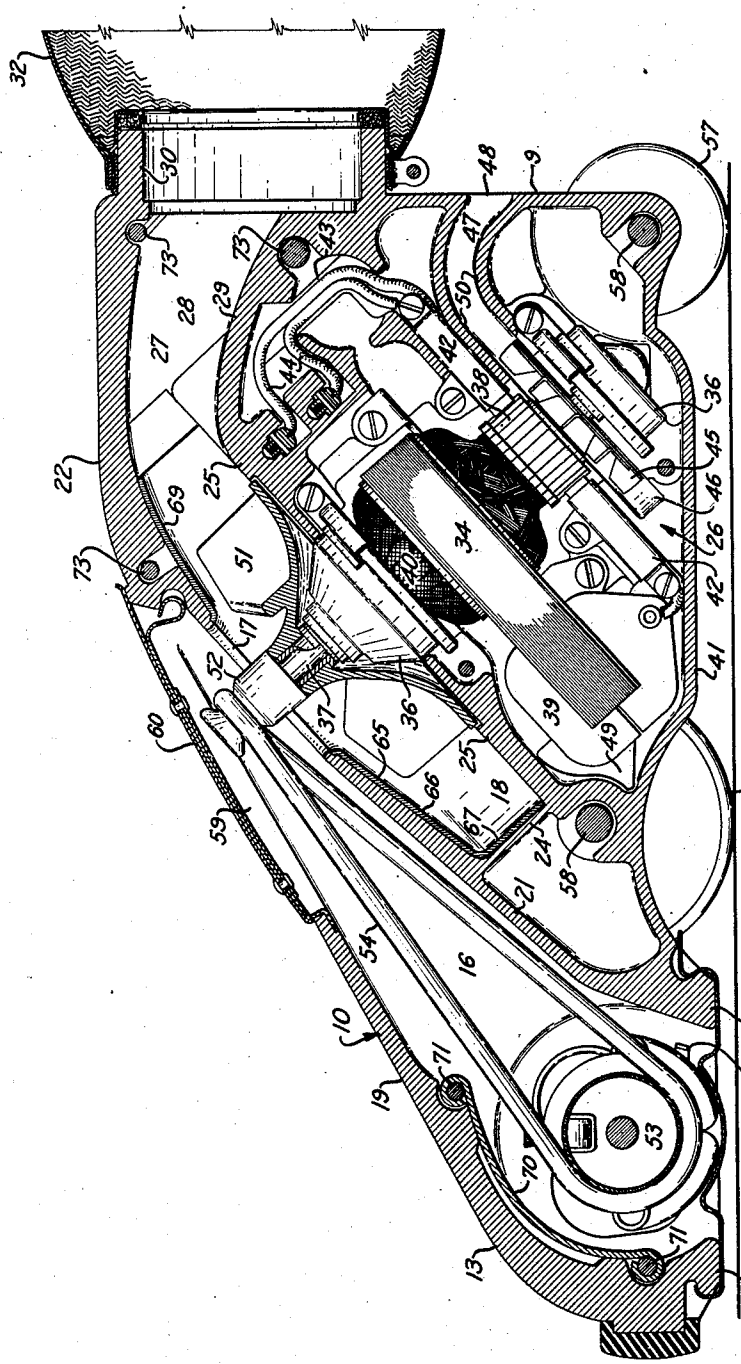


Fig. 1

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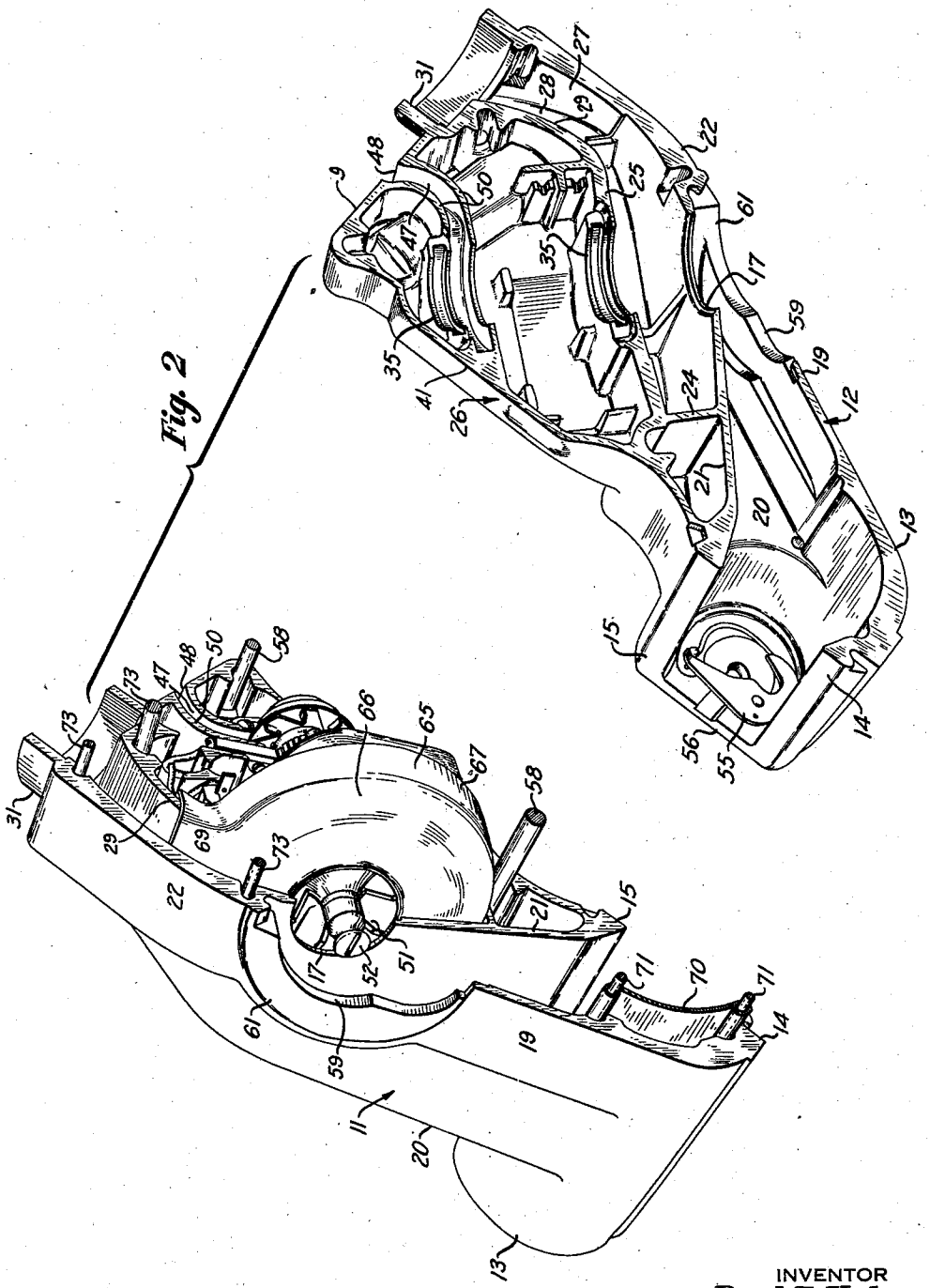
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SUCTION CLEANER

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Fig. 2



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SUCTION CLEANER

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4 Claims. (Cl. 15—16)

This invention relates to suction cleaners and more particularly to casings therefor.

An object of the invention is to provide a cleaner casing composed of two complementary sections separated along the vertical median line of the motor housing, fan chamber and nozzle. Another object is to provide a two-part cleaner casing having a fan chamber liner which forms a wall of the fan chamber and spans the meeting edges between the two complementary cleaner casing sections. A further object is to provide a liner which forms a wall of the nozzle and spans the meeting edges between the two complementary cleaner casing sections. Further objects and advantages of the invention will be apparent from the specification and drawings, wherein:

Figure 1 is a vertical sectional view of a casing section, and

Figure 2 is a perspective view of the two casing sections showing them separated at an angle of 180 degrees with respect to each other.

The embodiment of the invention herein disclosed comprises a main cleaner casing 10, formed of two complementary sections 11 and 12 which are bolted together along the vertical median line of the main cleaner casing. Each casing section is preferably produced by a molding process using "Bakelite" or other type of plastic, and which are so molded as to eliminate side cores during the molding process.

A nozzle 13 at the front end of the main casing is provided with front and rear nozzle lips 14 and 15 and communicates with a suction passageway 16 extending upwardly and rearwardly to the inlet opening 17 of a fan chamber 18 which is also upwardly and rearwardly inclined. The suction passageway 16 is defined by the upwardly rearwardly extending front top wall 19 of the cleaner casing, depending walls 20, 20 and by a partition 21 which extends from the rear nozzle lip 15. The top wall of the fan chamber 18 is formed by the partition 21 and that portion 22 of the top casing wall which extends substantially horizontally rearwardly from the upper end of the inclined casing front wall 19. Depending from the partition 21 is a wall 24 forming the side wall of the fan chamber, and the bottom wall of the latter is formed by a partition 25 which also forms a wall of the motor housing 26.

Communicating with the fan chamber 18 is an exhaust passageway 27 defined by the top horizontal casing wall 22, depending side walls 28, 28 and a partition 29 which forms a substantial horizontal continuation of the motor housing top wall 25. A bag flange 30 is provided at the rear end of the exhaust passageway 27 and is formed by means of semi-circular ribs 31 in each casing section, and a dust bag 32 is removably attached to the bag flange 30.

The motor housing 26 is formed by the cooperating casing sections 11 and 12 to house a motor 34, semi-circular ribs 35, 35 being provided in each casing section for the reception of the motor bearings 36, 36 to support the motor in a downwardly rearwardly inclined position. The motor 34 is of the unicoil type and is provided with an armature shaft 37, commutator 38, and a single coil 39 which is disposed at one side of the armature 40 and along the bottom wall 41 of the cleaner casing 10. The motor brushes 42, 42 are supported in the casing section 11 and a cavity 43 is formed in the latter for the motor circuit conductors 44. A motor ventilating fan 45 is arranged in a fan chamber 46 provided in the casing 10 between the commutator and lower motor bearing and communicates with a passageway 47 which has its outlet 48 in the rear wall 9 of the casing below the bag flange 30. The ventilating fan chamber 46 and passageway 47 are formed by complementary partitions 50, 50 in each casing section. An air inlet opening 49 is provided in the side wall of the casing section 11 adjacent the coil 39, whereby the ventilating fan 45 draws air through the inlet opening 49 and thence over the motor 34 into the fan chamber 46 and discharges the air through the passageway 47 to cool the motor.

A suction fan 51 is disposed in the fan chamber 18 and is rotated by the motor 34 which also rotates a pulley 52 for driving a surface agitating member 53 by means of a belt 54 arranged in the suction passageway 16. The surface agitating member 53 is removably and rotatably mounted in the nozzle 13 by means of spring latch members 55 arranged in the opposite end walls 56 of the nozzle 13.

The cleaner casing is supported on front and rear wheels 57 mounted on shafts 58 extending through the cleaner casing. In order to convert the cleaner from an on-the-floor type to an off-the-floor cleaner, a converter opening 59 is provided in the inclined top casing front wall 19 opposite the fan chamber inlet 17 and is normally closed by a removable cover plate 60. The converter opening 59 is formed by complementary semi-circular ribs 61 in each casing section.

Prior to assembling the cleaner, a fan casing liner 65 is inserted in that portion of the fan chamber 18 defined in the casing section 11. The

liner is provided with a top wall 66 and a depending side wall 67 which conforms to the upper wall 21 and side wall 24 of the fan chamber, and is provided with a substantially U-shaped portion 69 that lines three walls of the exhaust passageway 27. Arranged in the casing section 11 is a nozzle liner 70 which conforms to the inner surface of the upper wall of the nozzle 13. The nozzle liner 70 is provided with bolts 71 along its longitudinal edges to locate it in proper position by securing the bolts to the two casing sections 11 and 12.

After the fan chamber liner 65 and nozzle liner 70 are positioned in the casing section 11, as shown in Figure 2, the motor 34 and fans 45 and 51 are inserted as a unit in the casing section 11, and thereafter the casing section 12 is bolted thereto by means of the bolts 73 and nozzle liner retaining bolts 71 extending through both casing sections.

It will be noted that the fan chamber liner 65 forms walls of the fan chamber 18 and spans the meeting edges between the casing sections 11 and 12, to prevent leakage of dirt-laden air between the meeting edges of the casing sections and reinforces the fan chamber against wear caused by the dirt impinging against the molded plastic walls of the chamber. The nozzle liner 70 also forms a top wall substantially throughout the length of the nozzle and spans the meeting edges between the two casing sections to reinforce the nozzle and prevent leakage of dirt-laden air between the meeting edges of the casing sections.

In operation, for normal on-the-floor cleaning, the motor 34 rotates the fan 51 and surface agitating member 53 to create suction and remove the dirt from the surface undergoing cleaning. The dirt is drawn into the nozzle 13 and is prevented from passing through the meeting edges between the two casing sections 11 and 12 because of the presence of the nozzle liner 70. When the dirt enters the fan chamber 18, it is thrown against the side and upper walls of the fan chamber and thus these walls must be airtight and able to withstand a severe abrasive effect. Since the fan casing liner 65 forms walls of the fan chamber it protects the molded plastic fan chamber walls and due to the fact that it spans the meeting edges between the two casing sections prevents dirt from passing between the meeting edges of the casing sections.

I claim:

1. A suction cleaner comprising a body of relatively frangible material and having a relatively frangible suction nozzle at the front thereof, said body being formed of two sections separable vertically from the forward nozzle wall to the rear of said body, each body section forming complementary portions of said relatively frangible nozzle, and means of greater strength than said relatively frangible material, said means arranged along the front wall of said nozzle which is subject to contact with furniture during movement of the cleaner over the surface being cleaned, said means spanning the meeting edges of said frangible nozzle to form a reinforcing wall substantially the length of the front relatively frangible nozzle wall.

2. A suction cleaner comprising a body of relatively frangible material and having a relatively frangible suction nozzle at the front thereof, said body being formed of two sections separable vertically from the forward nozzle wall to the rear of said body, each body section forming complementary portions of said relatively frangible nozzle, means of greater strength than said relatively frangible material, said means arranged along the front wall of said nozzle which is subject to contact with furniture during movement of the cleaner over the surface being cleaned, said means spanning the meeting edges of said frangible nozzle to form a reinforcing wall substantially the length of the front relatively frangible nozzle wall, and retaining means on said reinforcing means and said body sections for positioning said reinforcing means along said front nozzle wall and to removably secure said body sections together.

3. A suction cleaner comprising a body of relatively frangible material and having a relatively frangible cavity having a side wall and opposed end walls, said body being formed of two sections separable vertically of said body and through an opening in one of said cavity end walls, each body section forming complementary portions of said relatively frangible cavity, means of greater strength than said relatively frangible material, said means lining said cavity side wall and said one end wall to form the side wall and one end wall and eye of a fan chamber, said means spanning the meeting edges of said body sections at the eye of said fan chamber, said means reinforcing walls of said relatively frangible fan chamber and preventing leakage of air between the meeting edges of said fan eye into said fan chamber, and means for securing said body sections together to draw the side wall of said frangible cavity transversely against the side wall of said lining means.

4. A suction cleaner comprising a body of relatively frangible material and having a relatively frangible nozzle at the front thereof, a relatively frangible fan chamber, and a relatively frangible air passageway therebetween, said body being formed of two sections separable vertically from the forward nozzle wall to the rear of said body, each body section forming complementary portions of said relatively frangible nozzle, air passageway and fan chamber, reinforcing means of greater strength than said frangible nozzle spanning the meeting edges of said body at said nozzle and extending along the front wall thereof to withstand the shock when said nozzle contacts furniture during cleaning, means lining the side and end walls of said frangible fan chamber and spanning the meeting edges of said body at said fan chamber to reinforce the same and prevent leakage of air between said meeting edges into said fan chamber, means for securing said nozzle reinforcing means and said body sections together, and means for securing said body sections together to draw the walls of said frangible fan chamber transversely against said fan chamber lining means to position the latter in said fan chamber.

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