Sept. 26, 1944. B. C. BECKER 2,359,194

SUCTION CLEANER

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Fig. 1

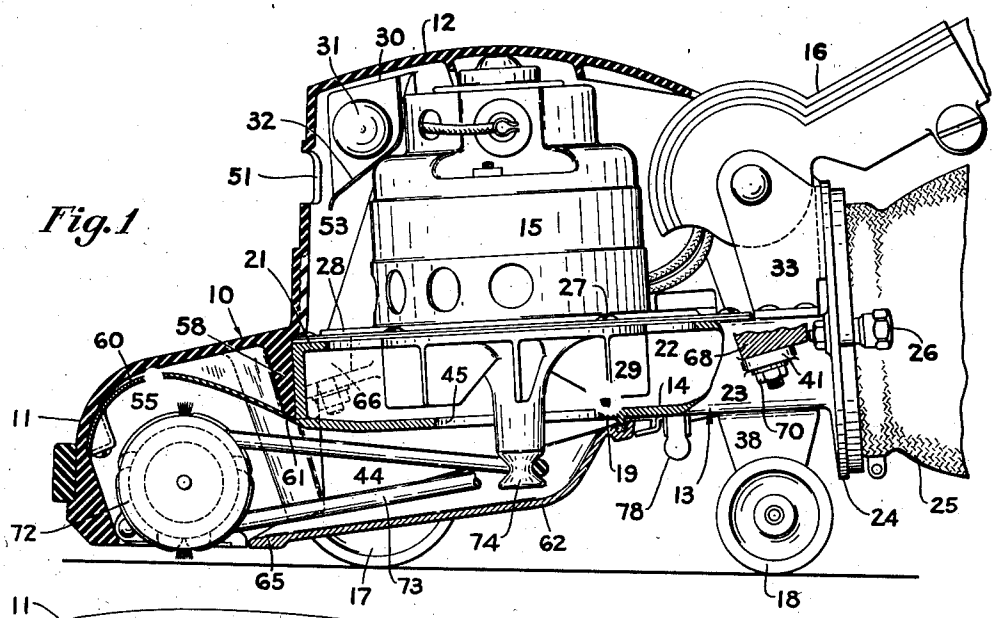
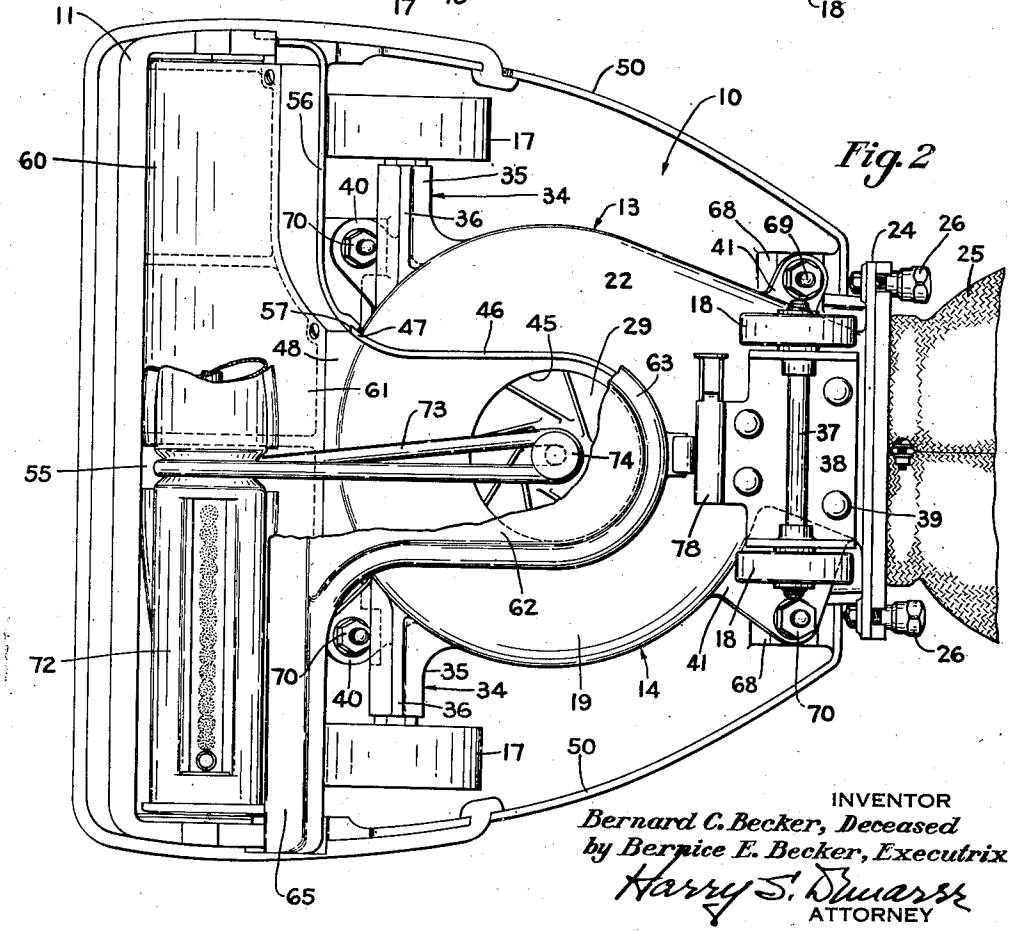


Fig. 2



INVENTOR

Bernard C. Becker, Deceased

by Bernice E. Becker, Executrix

Harry S. Duarte

ATTORNEY

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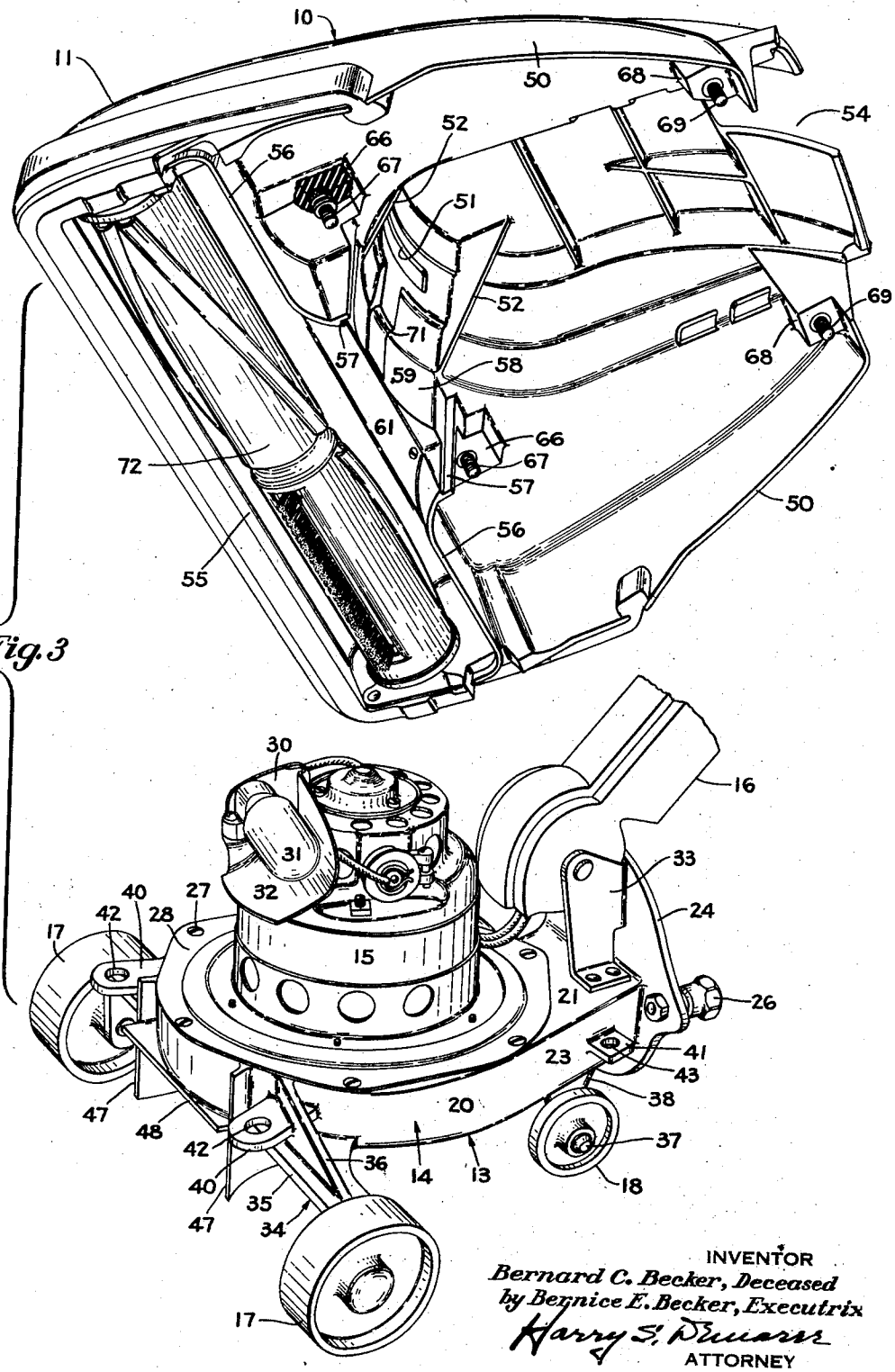


Fig. 3

INVENTOR

Bernard C. Becker, Deceased

by Bernice E. Becker, Executrix

Harry S. Duncan

ATTORNEY

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UNITED STATES PATENT OFFICE

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SUCTION CLEANER

Bernard C. Becker, deceased, late of Canton, Ohio, by Bernice E. Becker, executrix, York, Pa., assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Application September 4, 1941, Serial No. 409,442

1 Claim. (Cl. 15—16)

This invention relates to suction cleaners and more particularly to new and improved cleaner parts which are easily fabricated into a suction cleaner.

An object of the invention is to provide a new and improved suction cleaner. Another object is to provide a suction creating unit including a motor, fan chamber, handle mounting and dirt bag support cooperating with a removable casing unit including the motor housing and nozzle. A further object is to support the elements comprising the suction creating unit on a metal casing which can withstand the relatively great strain caused by the operation of the motor and fan, while the outer casing unit which is subjected to relatively less strain is formed of plastic material or light weight metal. Another object is to provide cooperating units to form a compact cleaner which can be manufactured at small cost. Other objects and advantages of the invention will be apparent from the following specification and drawings wherein:

Figure 1 is a vertical sectional view of one embodiment of the invention;

Figure 2 is a bottom view of the embodiment shown in Figure 1 with parts broken away to clearly illustrate the invention; an

Figure 3 is a perspective view of the cooperating suction unit and outer casing unit separated preparatory to assembly.

The embodiment of the invention disclosed in Figures 1 to 3 comprises a suction cleaner formed of an outer casing unit 10 including a nozzle 11 and motor housing 12 removably attached to a suction creating unit 13 including a metal casing 14 supporting a motor 15, handle 16 and front and rear wheels 17 and 18, respectively. The metal casing 14 of the suction creating unit 13 forms the bottom wall 19, vertical side wall 20 and part of the top wall 21 of a fan chamber 22 from which rearwardly extends a metallic exhaust passageway 23, terminating in an annular flange 24 to which a dirt bag 25 may be removably attached by means of a pair of nut and bolt connections 26. Removably mounted on the upper wall 21 of the fan chamber 22 by means of screws 27 is a metallic plate 28 which completes the top wall of the fan chamber 22 and supports the motor 15 which rotates a fan 29 disposed in the fan chamber 22. Mounted on the top forward end of the motor 15 is a lamp supporting bracket 30 for a lamp 31 arranged horizontally forwardly of the motor 15 and a reflector 32 carried by the motor 15 extends behind and below the lamp 31.

Supported on the top wall of the exhaust passageway 23 between the motor 15 and the bag supporting flange 24 is a handle bracket 33 which pivotally supports the handle 16. Extending laterally integrally from the fan chamber side wall 20 is a pair of brackets 34, 34 having strengthening horizontal and vertical webs 35 and 36, respectively, to rotatably support the front wheels 17. The rear wheels 18 are journalled on an axle 37 carried by a bracket 38 fastened by rivets 39 to the bottom wall of the exhaust passageway 23. A pair of lugs or ears 40, 40 are formed integrally with the side wall 20 of the fan chamber and project forwardly and laterally outwardly at an angle of approximately 45°, and a pair of lugs or ears 41 extend laterally and integrally from the side wall of the exhaust passageway 23, the lugs 40 and 41 being provided with openings 42 and 43, respectively, for receiving attaching studs carried by the outer casing unit 10.

The suction passageway 44 communicating with the eye 45 of the fan chamber 22 is formed in part by a wall 46 depending integrally from the bottom wall 19 of the fan chamber and terminates forwardly of the latter in vertically arranged webs 47, 47 which extend to the top wall of the fan chamber for connection with the outer casing unit 10. The top wall of the suction passageway 44 is formed by the bottom wall 19 of the fan chamber and a web 48 extending forwardly in the plane of the bottom wall of the fan chamber and transversely between and forwardly of the vertical webs 47, 47 forming the side walls of the suction passageway 44 for connection with the outer casing unit 10.

The outer casing unit 10 consists of one piece of metal or molded plastic having the motor housing 12 and nozzle 11 from which rearwardly extends a skirt-like marginal wall 50. The motor housing 12 has an opening 51 in its front wall for passage of light rays from the lamp 31 forwardly of the nozzle 11 and a pair of vertically arranged triangularly shaped webs 52 formed integrally with the housing are arranged on either side of the lamp and along the motor 15 to form with the latter and the reflector 32 a motor cooling air passageway 53 with a discharge outlet in the opening 51. A recess 54 is provided at the rear end of the upper wall of the housing 12 to receive and enclose the handle supporting bracket 33 on the suction creating unit 13.

The nozzle 11 has a downwardly facing open mouth chamber 55 which extends the width of the outer casing unit 10 and is partially formed

by the exterior walls of the latter. The rear wall of the nozzle chamber 55 is formed by wall segments 56, 56 extending inwardly from the end walls of the nozzle 11 and terminate in spaced relation in rearwardly curved rabbeted edges 57, 57 which receive the marginal ends 47, 47 of the suction creating unit 13 to also form part of the suction passageway 44. Integral with the outer casing unit 10 is a depending wall 58 which fits between the webs 47, 47 and above the wall 48 of the suction creating unit 13 and has its inner surface 59 contoured similarly to the adjacent side wall 20 of the fan chamber 22 to snugly engage the latter and form an abutting contact surface therebetween of relatively considerable area. The top wall of the nozzle chamber 55 is formed by a concave sheet metal plate 60 extending the full length of the nozzle chamber and is provided with a rearwardly extending lip 61 which rests against the lower edge of the depending arcuate wall 58 and has abutting contact with the marginal edge of the projecting web 48 in the suction creating unit 13 to complete the entrance to the suction air passageway 44.

In order to complete the suction air passageway 44 from the nozzle chamber 55 to the fan eye 45, a removable bottom plate 62 is provided and has a marginal edge 63 in abutting contact with the lower edge of the depending wall 46 in the suction creating unit 13 and the lower edges of the depending walls 56 in the outer casing unit 10, the forward edge of the plate 62 forming the rear lip 65 of the nozzle suction mouth.

A pair of blocks 66, 66 are integrally formed in the underside of the outer casing unit 10 and in which are rigidly anchored a depending stud 67 and similarly a pair of blocks 68, 68 at the rear end of the outer casing unit 10 are provided with a depending stud 69, the studs 67 and 69 extending through the openings 42 and 43, respectively, in the suction creating unit 13. Nuts 70 are applied to the studs to securely fasten the two units together. A shoulder 71 on the outer casing unit 10 below the lamp opening 51 forms a limiting stop which bears on the top wall of the fan chamber 22 when the two units are assembled. Rotatably mounted in the nozzle chamber 55 is a surface contacting member 72 which is rotated by a belt 73 extending through the passageway 44 to a pulley 74 carried by the motor armature shaft.

In order to assemble the suction creating unit 13, the rear caster 38 is riveted to the underside of the exhaust passageway 23 and the handle bracket 33 is riveted to the top wall of the exhaust passageway. Thereafter the motor 15 carrying the lamp 31 is mounted on the fan casing and the front and rear wheels journalled on their respective supports. The outer casing unit 10 is placed over the suction creating unit 13 with the studs 67 and 69 in their respective openings and the depending arcuate wall 58 coextensive with a portion of the fan casing side wall 20, the rabbeted edges 57, 57 of the outer casing unit 10 receiving the marginal edges 47, 47 forming part of the side wall of the air passageway 44 in the suction creating unit 13, and the lip 61 of the nozzle chamber top wall 60 abutting the marginal edge of the top wall segment 48 in the suction creating unit 13. The nuts 70 are tightened on their studs until the limiting stop 71 abuts the top wall of the fan chamber 22. The outer casing unit 10 thus encloses the pivotal mounting of the handle and the suction creating unit 13. The surface contacting member 72 is inserted in the nozzle chamber 55 and the belt 73 attached to the pulley 74. Thereafter the bottom plate 62 is removably attached to the two units 10 and 13 by means of a latch 78, the marginal edge 63 of the plate 62 spanning the meeting edges of the vertical webs 47, 47 and 57, 57 on the units 10 and 13.

From the foregoing it will be perceived that the suction creating unit which is subjected to the greatest vibration due to the operation of the motor and fan is constructed of metal, that the outer casing unit comprising elements subjected to relatively less vibration is formed of molded plastic or relatively light weight metal. The contiguous surfaces of the arcuate wall 58 on the outer casing unit and the fan chamber side wall 20 of the suction creating unit provide a large bearing surface between the separable units to distribute any impacts received on the outer casing unit to the suction creating unit. Further, the rabbeted edges 57, 57 on the outer casing unit engaging the wall segments 47, 47 of the suction creating unit extend above the top wall of the suction passageway 44 to prevent relative torsional movement between the two units at the meeting edges of these members to thereby eliminate any possibility of air leakage therebetween in the suction air passageway 44.

What is claimed is:

A suction cleaner comprising a suction creating unit having a metal casing of relatively heavy material defining part of a fan chamber, a motor mounted on said metal casing, an exhaust passageway in said metal casing for discharging dirt-laden air from said fan chamber, a bag supporting flange at the end of said exhaust passageway, a handle supporting bracket mounted on said casing between said motor and bag supporting flange, cleaner supporting wheels all mounted on said metal casing, an outer casing unit of light material relative to said metal casing and removably mounted on said suction creating unit to enclose said motor and handle bracket, a nozzle formed integrally with said light weight outer casing unit, and means defining a suction air passageway between said nozzle and fan chamber.

BERNICE E. BECKER,
Executrix of the Estate of Bernard C. Becker, Deceased.