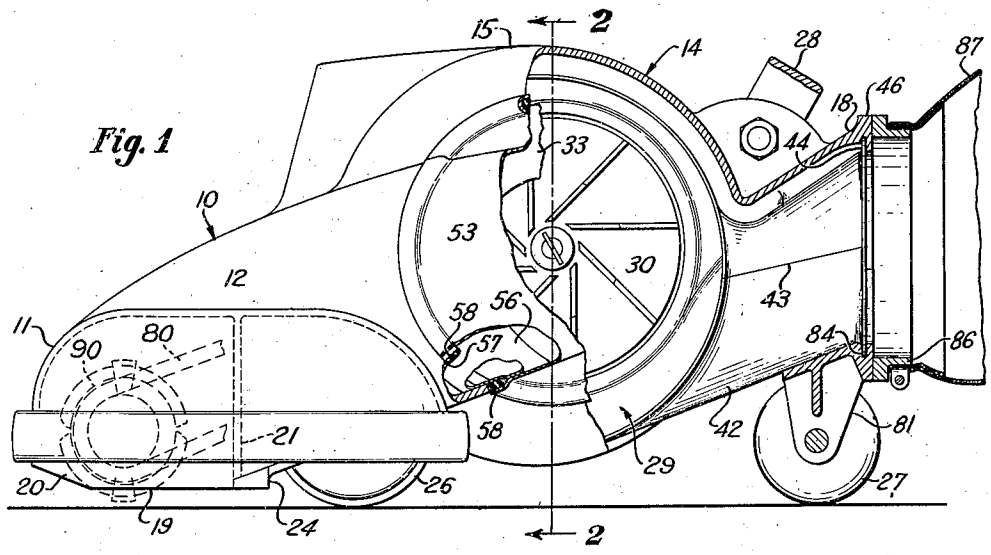
Jan. 2, 1945. B. C. BECKER 2,366,479

SUCTION CLEANER

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Fig. 1



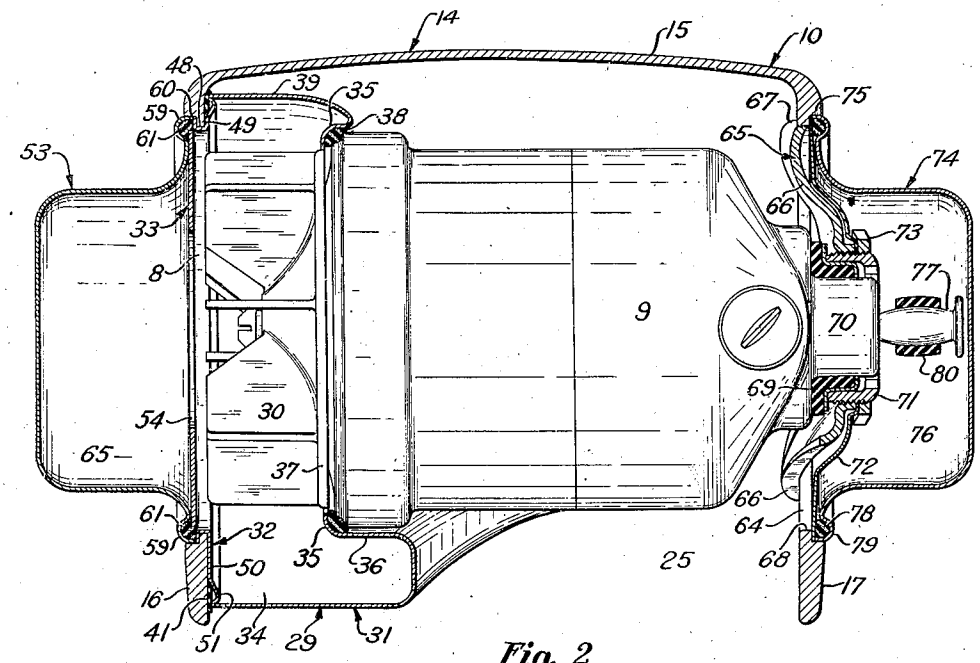




Fig. 2

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Jan. 2, 1945. B. C. BECKER 2,366,479

SUCTION CLEANER

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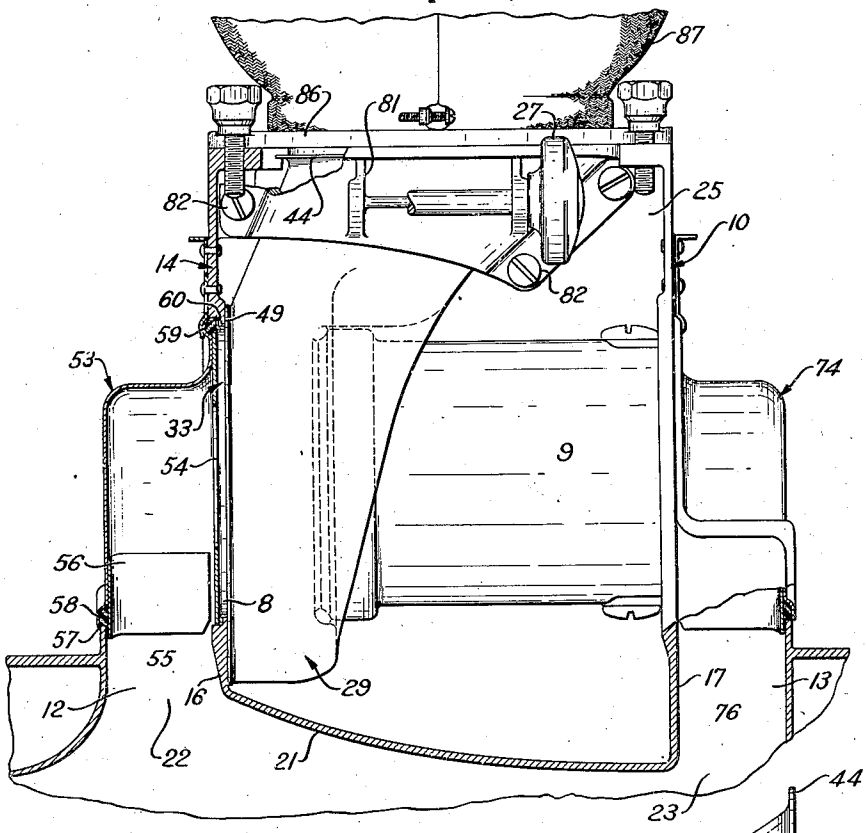



Fig. 3

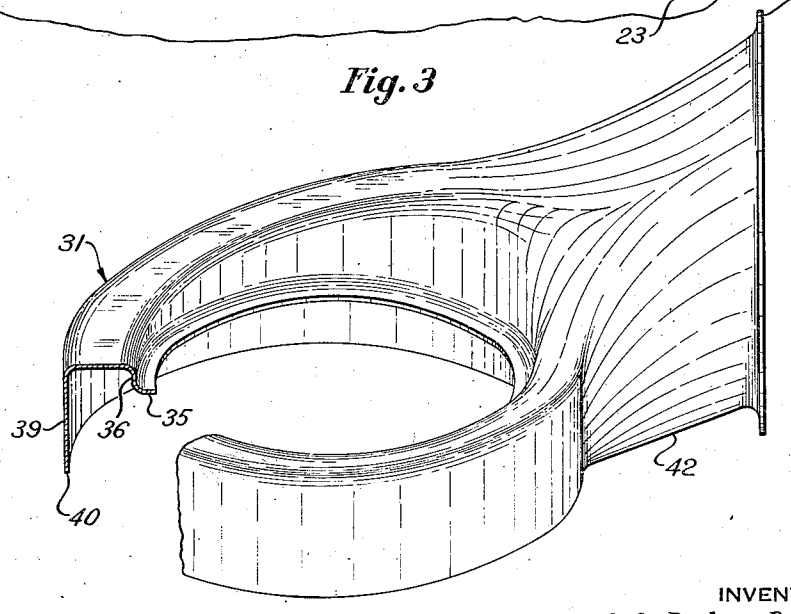



Fig. 4

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SUCTION CLEANER

Filed Sept. 19, 1941 3 Sheets-Sheet 3

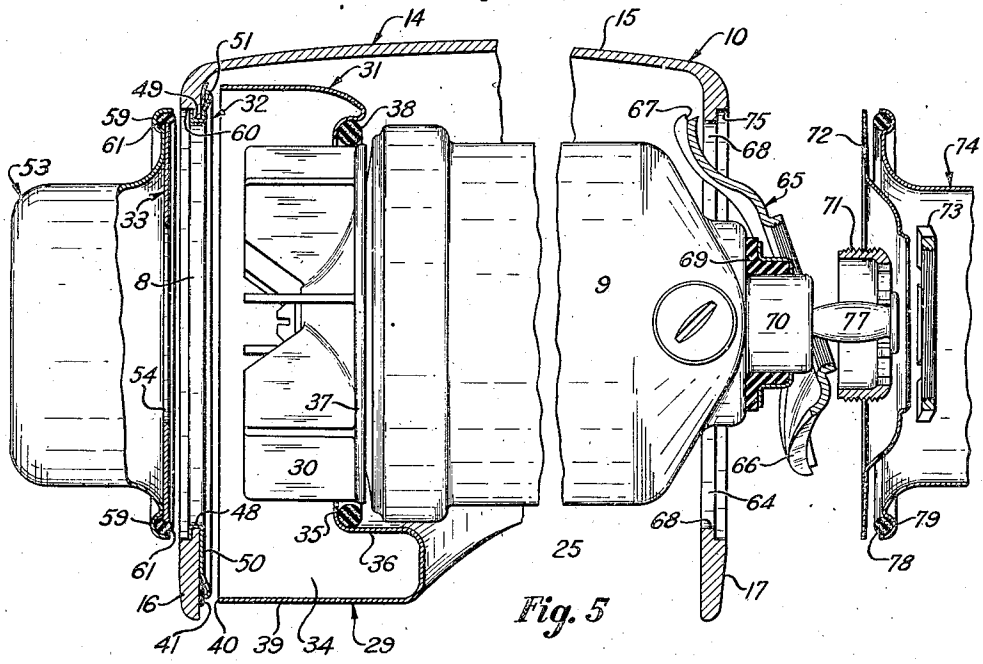



Fig. 5

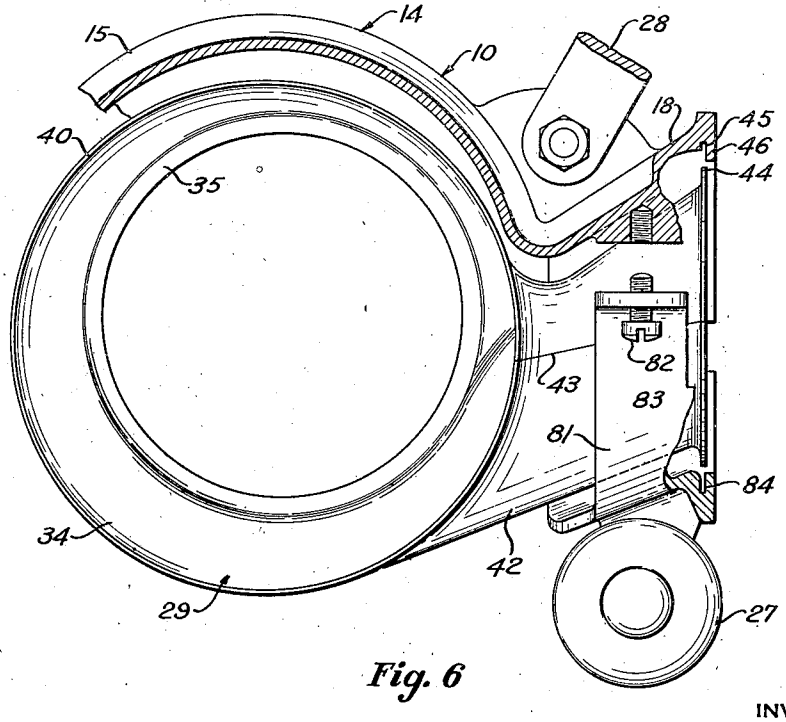



Fig. 6

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Patented Jan. 2, 1945 2,366,479

# UNITED STATES PATENT OFFICE

2,366,479

## 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 19, 1941, Serial No. 411,526

2 Claims. (Cl. 15—6)

This invention relates to suction cleaners and more particularly to a novel fan casing and the fabricating of suction cleaners.

An object of the invention is to provide a new and improved suction cleaner. Another object is to provide a new and improved stamped fan casing. A further object is to provide a sectional fan casing. Another object is to provide parts that are easily fabricated to form a suction cleaner. Other objects and advantages of the invention will be apparent from the specification and drawings, wherein:

Figure 1 is a side elevational view of a suction cleaner with parts removed to illustrate the invention,

Figure 2 is a section along line 2—2 of Figure 1,

Figure 3 is a bottom view at the rear end of the suction cleaner.

Figure 4 is a perspective view of the stamped fan chamber and exhaust passageway,

Figure 5 is a view illustrating the fabricating of the suction cleaner, and

Figure 6 is a view illustrating the fabricating of the cleaner casing, fan casing and rear wheels.

The embodiment of the invention herein disclosed comprises a cleaner body having a casing 10 provided with a nozzle 11 at its forward end from which extends rearwardly a pair of spaced inverted U-shaped conduits 12 and 13 and formed therebetween is an inverted U-shaped housing 14 having an arcuate top wall 15 and depending side walls 16 and 17 terminating in a substantially inverted U-shaped housing extension 18. The nozzle 11 has a downwardly disposed open mouth 19 defined by the front wall 20 of the casing 10 and a wall 21 spaced therefrom, the wall 21 having openings 22 and 23 to provide communication between the nozzle mouth 19 and the conduits 12 and 13. A plate 24 is removably attached to the casing 10 to complete the conduits 12 and 13. The housing 14 rearwardly of the wall 21 defines a space 25 which is open beneath the casing 10 adjacent the surface being cleaned. A pair of front wheels 26 and rear wheels 27 and a pivoted handle 28 are mounted on the cleaner casing 10 to move the cleaner over the surface being cleaned.

Disposed within the housing 14 is a horizontally arranged motor 9 and a fan casing 29 in which a fan 30 is supported by the motor armature. The fan casing 29 is formed of steel stamping sections 31, 32 and 33 which define a fan chamber 34. The fan casing section 31 has an annular collar 35 and a flange 36 which seat upon the motor 9 adjacent the back wall 37 of the fan 30, the flange 36 overlying the motor 9. A resilient gasket 38 is interposed between the collar 35 and the flange 36 and motor 9 to provide an air-tight seal therebetween. The side wall 39 of the fan casing section 31 has its marginal edge 40 in contact with an annular gasket 41 which bears against the housing side wall 16. Stamped integrally with the fan casing section 31 is an exhaust passageway 42 having its meeting edges 43 welded together, the exhaust passageway terminating in an annular flange 44 which is arranged in an arcuate slot 45 at the rear end 46 of the housing extension 18.

The other fan casing section 32 has an annular U-shaped groove 48 which fits about an annular rib 49 defining an opening 8 in the side wall 16 of the housing 14, and extends along the inner surface of the housing side wall 16 to form part of the front wall 50 of the fan chamber 34. Along the marginal edge of the fan casing front wall 50 is an annular bead 51 about which the marginal edge 40 of the fan casing side wall 39 is positioned to support one end of the motor 9. Both the marginal bead 51 and the marginal edge 40 are pressed against the annular gasket 41 to form an air-tight seal therebetween.

The front wall of the fan chamber 34 is completed by the fan casing section 33 formed in a flat circular disc which is rigidly attached to a stamped steel end cap 53 and has an annular opening 54 forming the eye of the fan chamber 34. The end cap 53 forms a continuation of the conduit 12 to provide a suction air passageway 55 from the nozzle 11 to the fan chamber 34. A member 56 is rigidly secured to and projects beyond the end cap 53 inwardly of the marginal edge 57 of the conduit 12 to lock the end cap 53 in position, and a gasket 58 provides an air-tight seal therebetween. A marginal bead 59 is also provided on that portion of the end cap 53 adjacent the casing side wall 16 and the exterior of the passageway 55 and resiliently fits in the rabbetted edge 60 of the opening 8 in the side wall 16 to assist in locking the end cap in position. A resilient gasket 61 is disposed between the beaded portion 59 and the periphery of the fan casing section 33 and contacts the latter to form an air-tight seal for the fan chamber 34.

The opposite end of the motor 9 projects through an opening 64 in the housing side wall 17 and is supported by means of a spider 65 having spaced arms 66 provided with flanged terminal ends 67 which seat in the defining edge 68 of the opening 64. A rubber washer 69 is arranged about the projecting motor bearing 70 and an ex-

teriorly threaded nut 71 receives the rubber washer 69 and is threaded into the spider 65 to support one end of the motor. The opening 64 is closed by a stamping 72 held in position by a nut 73 threaded onto the nut 71.

A stamped steel end cap 74 is removably secured to the rabbetted portion 75 of the opening 64 and forms a continuation of the conduit 13 to complete a passageway 76 extending from the nozzle 11 to the motor pulley 77 on the motor armature shaft. A resilient gasket 78 is disposed in a bead 79 formed in the periphery of the end cap 74 to form a seal between the latter and the plate 72. A belt 80 extends from the pulley 77 through the passageway 76 to a surface engaging member 90 rotatably mounted in the nozzle 11.

The rear wheels 27 are supported on a caster 81 removably attached by means of screws 82 to the upper wall of the housing extension 18 and is provided with a U-shaped portion 83 to accommodate the exhaust passageway 42 to position the latter in the cleaner body. The rear caster 81 has an arcuate slot 84 which receives a part of the flange 44 on the exhaust passageway 42 and cooperates with the rear end 46 of the housing extension 18 to form an annular wall for the removable attachment of a bag ring 86 supporting the lower end of the cleaner bag 87 which has its upper end suitably supported from the cleaner handle 28.

In order to fabricate the cleaner, the fan casing section 32 is inserted from the underside of the cleaner through the open space 25 and is secured to the annular rib 49 defining the opening 8 in the housing side wall 16. The fan casing section 31 is then inserted in the open space 25 and its marginal edge 40 arranged about the bead 51 to position the section 31. The motor and fan are as a unit passed through the opening 64 in the housing side wall 17, the fan passing through the collar 35 into the fan chamber. Thereafter, the spider 65 is tilted through the opening 64 and the nut 71 is arranged about the rubber washer 69 and threaded into the spider 65 to force the marginal edge 40 of the fan casing section 31 tightly against the gasket 41 compressing the latter between the fan casing section 32 and the housing side wall 16 to form air seals therebetween. At the same time the gasket 38 forms an air-tight seal between the fan casing collar 35 and the motor 9. The motor is thus supported by the spider 65 and the fan casing section 31 which engages the bead 51 on the fan casing section 32. The plate 72 is then rigidly secured by the nut 73 to close the opening 64 and the belt 80 connected to the pulley 77, and the end cap 74 attached to the casing side wall 17 to complete the passageway 76. The end cap 53 is attached to the cleaner casing wall 16 by inserting the member 56 in the conduit 12 and the beaded portion 59 into the opening 8 in the side wall 16 to thereby complete the suction air passageway 55 and to form the eye 54 in the fan chamber 34. The rear caster 81 is secured to the housing extension 18 and in so doing supports the fan chamber exhaust passageway 42 and forms part of the annular wall to which the bag supporting ring 86 is attached.

In the operation of the cleaner, the unshown surface agitating member is driven by the belt 80 and dislodges dirt from the surface being cleaned, while the fan 30 draws the dirt through the nozzle and air passageway 55 into the fan chamber 34 and discharges it through the exhaust passageway 42 into the bag 87.

If it is desired to convert the cleaner from on-the-floor to off-the-floor cleaning, the end cap 53 is removed and a converter inserted to close off the air passageway 55 to the nozzle 11 whereby dirt-laden air is drawn from the surface being cleaned through the converter into the fan chamber and discharged into the dirt bag 87.

What is claimed is:

1. A suction cleaner comprising, a cleaner body having top and depending side walls defining an opening, a nozzle forward of said opening, a fan casing having a portion thereof removably inserted in said cleaner body by passing said fan casing through said opening, an opening in one of said depending body side walls for passing a motor therethrough into said body into engagement with said fan casing to support the latter, fastening means in said side wall opening engaging said cleaner body and motor, tightening of said fastening means exerting a force through said motor and fan casing portion to removably support said fan casing portion and motor in said body, said motor operating a fan in said casing, and a suction passageway connecting said nozzle and fan casing.

2. In a suction cleaner, a cleaner body having spaced opposed walls, a nozzle in said body and having a rotatably mounted agitator therein, a motor-fan casing between said opposed walls, means mounted on one of said opposed walls and on said motor-fan casing and movable with respect to the latter to effect movement of said motor-fan casing, said motor having its shaft supported in said means and connected to said agitator to drive the latter, tightening of said means effecting movement of said motor-fan casing toward the other of said opposed walls into supported position with respect to said other opposed wall to support said motor-fan casing from said other opposed wall and from said means and maintain said motor in connected relation with respect to said agitator.

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