WHEELED SUPPORT STRUCTURE FOR VACUUM CLEANERS

Original Filed April 1, 1958
WHEELED SUPPORT STRUCTURE FOR VACUUM CLEANERS

Raymond Desencreyes, Montreal, Quebec, Canada, assignor to Aktiebolaget Electrolux, Stockholm, Sweden, a corporation of Sweden


Divided and this application Apr. 22, 1959, Ser. No. 811,248

4 Claims. (Cl. 15—327)

My invention relates to suction cleaners. This application is a division of my application Serial No. 725,727, filed April 1, 1958, for Vacuum Cleaner Structure.

Tank-type suction cleaners supported in a horizontal position often are provided with a cover that cooperates with an open end of the cleaner casing. In recent years suction cleaners of this kind usually have been supported horizontally by rollers or wheels including a single caster wheel at the front end of the cleaner.

An object of the invention is to provide an improved tank-type suction cleaner having a stabilizing prop at the vicinity of a front caster wheel for minimizing the tendency of the cleaner to become unbalanced and tip over.

Further objects and advantages of the invention will become apparent as the following description proceeds, and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the invention, reference may be had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view of a suction cleaner embodying the invention;

FIG. 2 is a bottom plan view of the cleaner illustrated in FIG. 1;

FIG. 3 is an end elevational view of the cleaner shown in FIGS. 1 and 2;

FIG. 4 is an enlarged fragmentary view of parts shown in FIG. 2 to illustrate details more clearly; and

FIG. 5 is an enlarged fragmentary elevational view of parts shown in FIG. 1, partly broken away and in section, to illustrate details.

Referring to the drawings, I have shown my invention embodied in a horizontal tank-type suction cleaner 10 comprising a casing 11, a front end cover 12 and rear end cover 14. The casing 11 is provided with a handle 15 and wheels 16 and 17 to facilitate movement thereof on a supporting surface, the wheels 17 being at opposing sides of the casing and the single caster wheel 16 at the front end of the casing being disposed between the side walls of the cleaner.

The front end cover 12 is formed with an inlet 18 to which a suction hose (not shown) is adapted to be removable connected. Suitable cleaning tools may be connected to a wand which in turn is connected to the outer free end of the suction hose and through which air flows into the front end of the casing by a suitable motor-fan unit 19 disposed therein. The motor-fan unit 19 is connected in an electrical circuit having a switch (not shown) provided with a manually operable control member 20 at the top of the casing 11. Dirt entrained in air drawn into the inlet 18 is separated from air when it passes through a dust collecting member 21, and air from which dirt has been removed is discharged from the casing through an opening (not shown) in the top end cover 14.

End rings 22 and 23 are provided at the front and rear ends, respectively, of the casing 11. The rear end ring 23, which is fixed to casing 11 in any suitable manner, is provided with a pair of downwardly extending brackets 24 upon which are mounted pins 25 about which the rear wheels 17 are rotatable.

The front wheel 16 forms part of a caster which is mounted at the bottom of casing 11 by structure including a member 55 which is fixed at 56 to the casing and provided with a central opening 57, as shown in FIG. 5. The caster includes a pair of cooperating parts 58 and 59 having anti-friction rollers 60 therebetween, the top part 58 fitting in position at the underside of the member 55 and the bottom part 59 forming the closed end of a depending bracket 61 of inverted U-shape having spaced arms at the lower end of which the wheel 16 is mounted at 62. The wheel 16 is rotatable about a horizontal axis at 62 which is eccentrically disposed with respect to a vertical axis at the region the bracket 61 is rotatably mounted at 63 on the member 55 at the opening 57 therein.

In accordance with my invention, the member 55 at the bottom of casing 11, upon which the caster bracket 61 is rotatably mounted at 63, forms the roof or ceiling of a stabilizing prop 74 for the suction cleaner. The stabilizing prop is provided with an inner vertical wall 75 which depends downward from the member 55 and is of semi-circular or U-form, as best illustrated in FIGS. 3 and 4. The wall 75 curves outwardly at the bottom part thereof and then upwardly at 76 to form vertical or arms 77 which extend both longitudinally and of transversely of the casing 11, as best illustrated in FIG. 4. In FIG. 2 it will be seen that the wing spread x of the arms 77 is greater than the distance y between the inner sides of the wheels 17, the outer parts of which approach vertical planes extending downward from the opposing sides of the casing 11. This will readily be evident from FIG. 3 where it will be observed that the arms 77 project laterally from the longitudinal center of the cleaner 10 beyond vertical planes passing through the inner sides of the rear wheels 17.

By providing a stabilizing prop 74 having a wing spread at least exceeding the distance the rear wheels 17 are spaced apart and in which the lowest regions of the wings or arms 77 are below the axis of rotation 62 of the front caster wheel 16, as indicated at 78 in FIG. 5, an effective prop for stabilizing the cleaner 10 is provided which effectively minimizes the tendency of the cleaner 10 to tip, irrespective of the position of the caster wheel 16 when it is being moved onto a rug at an edge thereof or from one room to another over a door threshold or sill. When there is any tendency for the cleaner to tip, the outer regions of the arms or wings 77 come in contact with the floor, rug or door threshold before the cleaner assumes a position of unstable equilibrium, thereby enabling the cleaner to move to its upright position when the condition causing the tilting passes.

In addition to providing a relatively wide wing spread, the stabilizing prop 74 is of such shape that it extends lengthwise of the cleaner 10 for a considerable distance to provide gliding surfaces at each side of the caster wheel 16 having the curved shape indicated at 79 in FIG. 5. This curved shape has a gradual slope from the rear of the stabilizing prop 74 to the lowest region 78 in FIG. 5 and then rises sharply to the vicinity of the front end ring 22. This will be evident from the fact that the inner vertical wall 75 becomes increasingly higher from the rear to the forward part thereof. Further, the trough formed between the vertical wall 75 and upwardly extending portion 76 joined thereto not only becomes wider from the rear to the front of the arms 77, as best seen in FIG. 4, but the radius of curvature of the trough becomes progressively larger from the rear to the front.
In FIGS. 3 and 5 it will be seen that the bottom surface of each arm 77 is convex both lengthwise and crosswise of the casing 11. The bottom surface of each arm slopes upward from the lowermost zone 78 to provide a region of spherical form, the bottom surface sloping upward at one rate in a direction to the rear of the zone and at a substantially sharper rate to the front and outside of the zone.

With this arrangement, the curve-shaped bottoms of the arms 77 provide rounded surfaces which become effective whenever the cleaner 10 is being moved forward onto a raised surface, such as a door threshold or the raised edge portion of a rug. Also, when the cleaner 10 is being moved when a descriptible rug, a stabilizing prop 74 not only prevents tipping of the cleaner but the gliding surfaces of the arms 77 become effective skids to facilitate movement of the cleaner over the surface to be cleaned. The forward parts 75a of the inner vertical wall 75 of the stabilizing prop 74 are at the immediate vicinity of the front cover lugs 80.

While a particular embodiment of the invention has been shown and described, such variations and modifications are contemplated as full within the true spirit and scope of the invention, as pointed out in the following claims:

I claim:

1. In an elongated tank-type suction cleaner, a casing, means for supporting the casing horizontally comprising a caster wheel at the front end of the casing, a member fixed to the bottom of the casing, means for mounting the wheel on the member for movement about a vertical axis, the outermost lateral edges of the member being placed apart a distance substantially equal to the width of the cleaner, the member having a downwardly depending wall of essentially U-shape in horizontal section with its open and closed ends to the front and rear of the caster wheel respectively, the wall increasing in height from its closed end to regions removed from its open end and then sharply decreasing in height from the regions to the extreme forward ends of the wall, the wall at its bottom being curved outward and upward to provide a zone to rotate in a region of spherical form, the bottom surface of each arm sloping upward at one rate in a direction to the rear of the zone and at a substantially sharper rate to the front and outside of the zone.

2. In a tank-type suction cleaner having an inlet and outlet at opposite ends and means for moving air therethrough, a casing, means for normally supporting the casing in a horizontally extending position including a single caster wheel at the front end of the casing and a pair of wheels at the rear end thereof, the front caster wheel being positioned between the opposing sides of the casing and the rear wheels being positioned with the outer parts thereof approaching vertical planes extending downward from the opposing sides of the casing, a stabilizing prop at the bottom of the casing having arms at the vicinity of the front wheel at each side thereof, each arm lengthwise of the casing extending forward and rearward of the vertical axis about which the front caster wheel moves, the wing spread of the arms at least exceeding the distance the inner parts of the rear wheels are separated from one another, the bottom surface of each arm being convex both lengthwise and crosswise of the casing, the bottom surface of each arm having a zone extending downward to a level at least as low as the horizontal axis about which the front caster wheel rolls, the bottom surface of each arm sloping upward at one rate in a direction to the rear of the zone and at a substantially sharper rate to the front and outside of the zone.

References Cited in the file of this patent

UNITED STATES PATENTS

963,483 Swartz .......................... July 5, 1910
1,695,183 Downey .......................... Dec. 11, 1928
2,088,236 Faber .......................... July 27, 1937
2,614,643 Quayle .......................... Oct. 21, 1952
2,862,223 Meyerhoefer ...................... Dec. 2, 1958

FOREIGN PATENTS

163,615 Great Britain ...................... May 26, 1921
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,003,179

October 10, 1961

Raymond Descarries

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 4, for "uward" read -- upward --;
line 42, for "arm" read -- arms --;
column 4, line 29, for "surfaces" read -- surface --.

Signed and sealed this 3rd day of April 1962.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents