

[54] CARPET SWEEPERS
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[22] Filed: Nov. 23, 1971
[21] Appl. No.: 201,343

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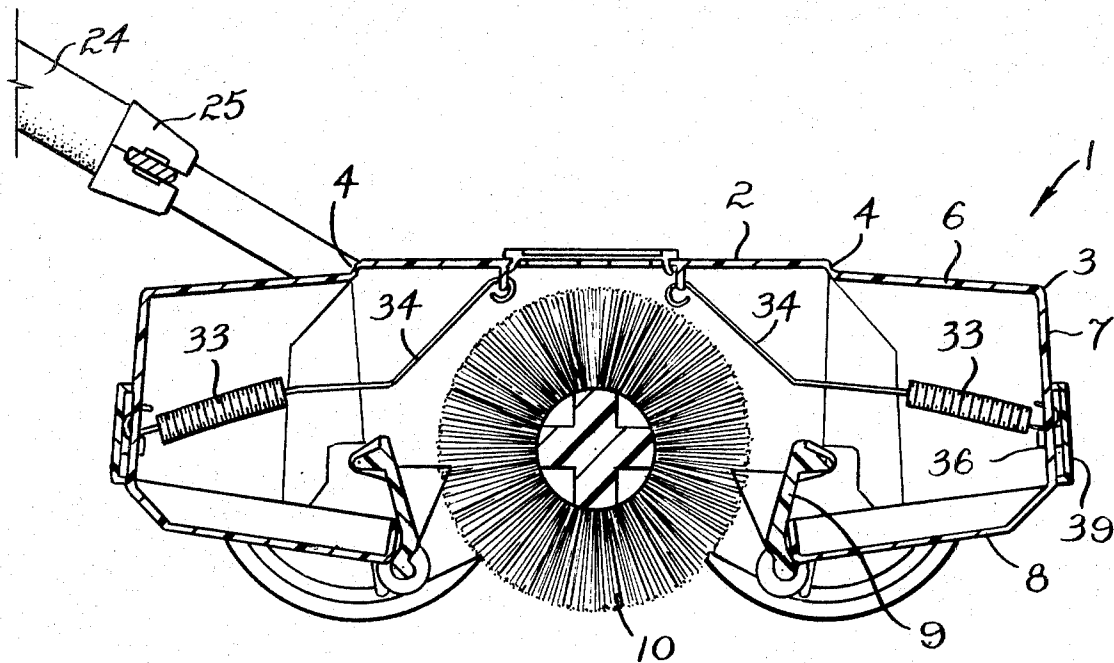
Primary Examiner—Edward L. Roberts
Attorney—Vern L. Oldham et al.

[30] Foreign Application Priority Data
July 19, 1971 Australia PA 5593/71
[52] U.S. Cl. 15/48
[51] Int. Cl. A47I 11/33
[58] Field of Search 15/41-48, 49 R,
49 C, 143, 145; 287/64

[57] ABSTRACT
A carpet sweeper having the body, end portions, strengthening partition walls and dust trays all integrally moulded from a suitable plastics material, the dust trays being hinged to the body portion along a hinge line formed by a weakened portion of the body material.

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4 Claims, 6 Drawing Figures



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3 Sheets-Sheet 1

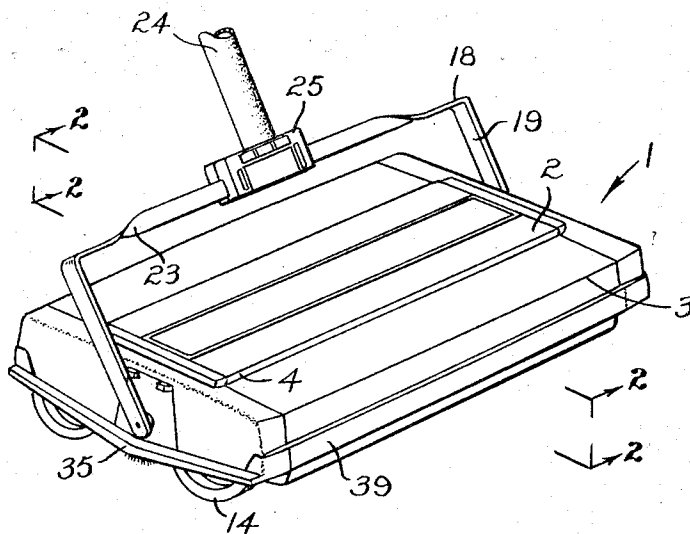


FIG 1

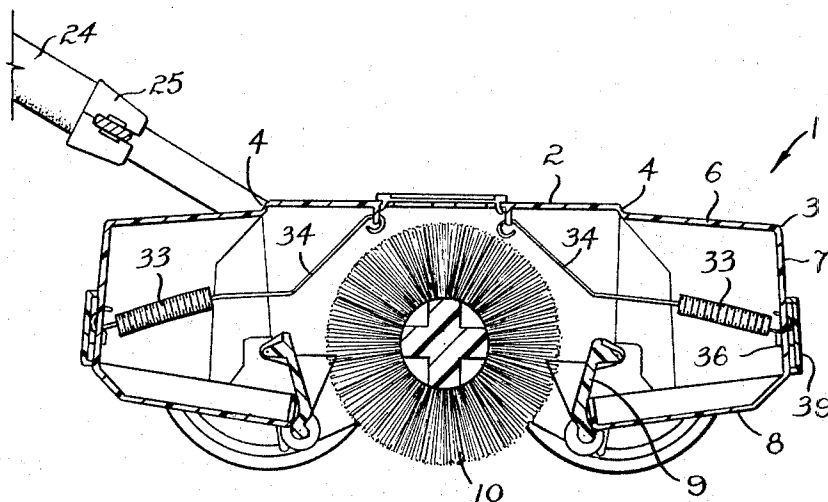


FIG 2

Inventors:

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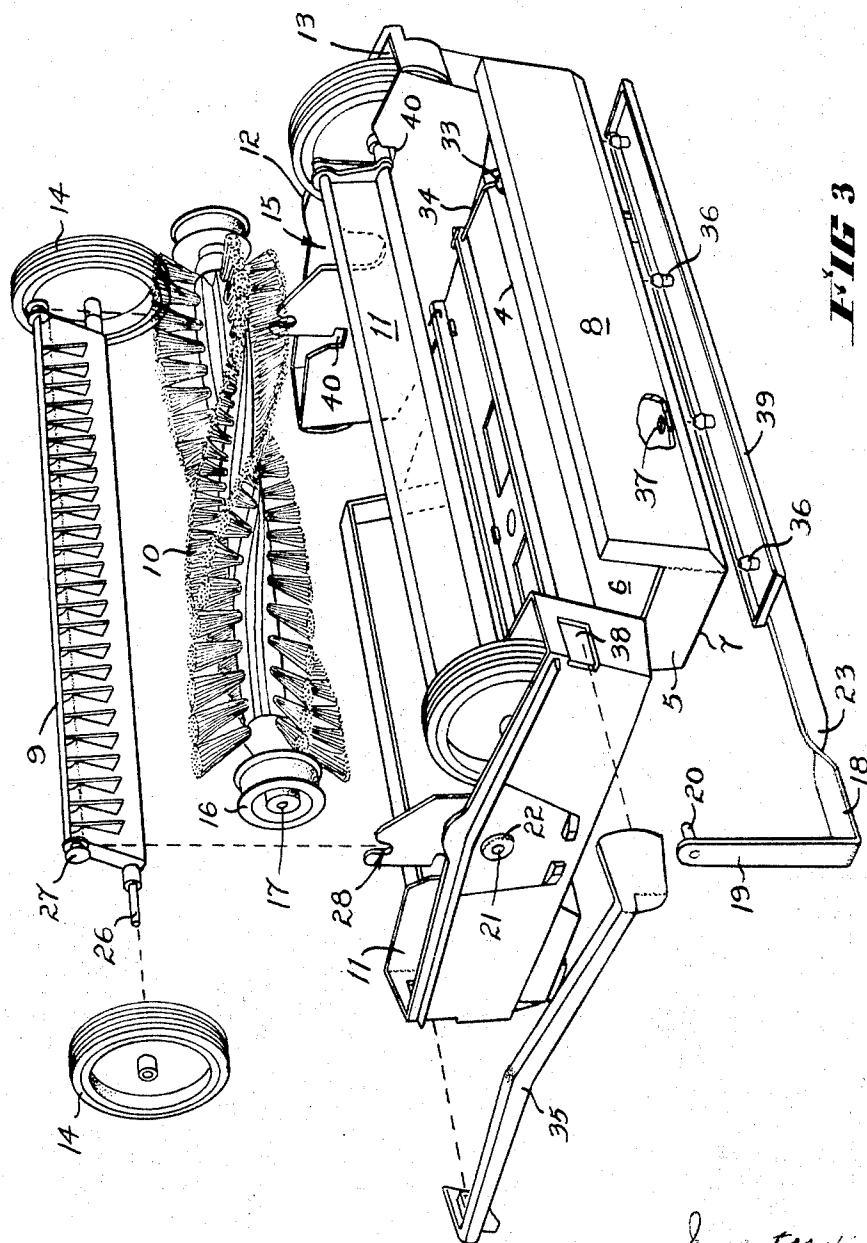
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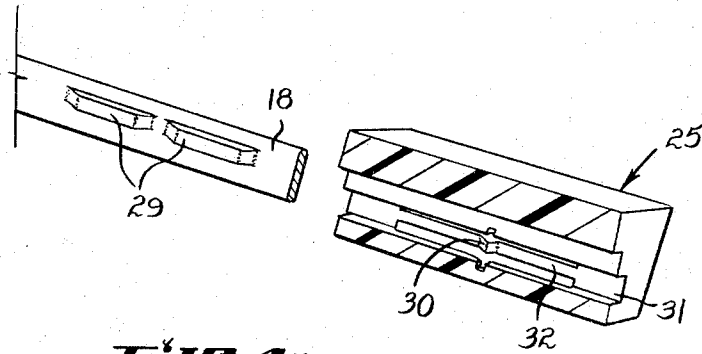


FIG 4

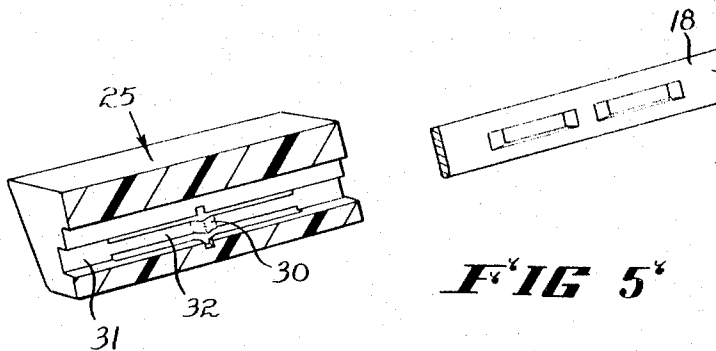
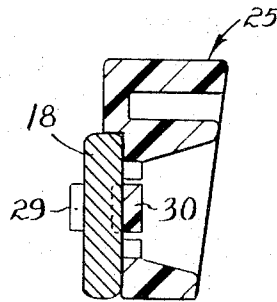


FIG 5

FIG 6



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CARPET SWEEPERS

This invention relates to carpet sweepers of the type where the supporting wheels drive a rotatable brush to sweep debris into dust trays carried on the body.

BACKGROUND OF INVENTION

Previously known carpet sweepers have a body constructed from a number of component parts, with the dust trays being separately formed and attached thereto and the top and side walls also being separately formed and joined together to form the body. One development which has taken place is to form the dust trays integrally with a portion of the body while the remaining parts of the body are separately formed and united together to form the body. However this has the disadvantage that a number of component parts must be formed and assembled together and it is an object of this invention to provide a carpet sweeper in which the body of the carpet sweeper is integrally moulded in one piece.

SUMMARY OF INVENTION

In this way the body by being moulded in one piece with and incorporating the dust trays attached therewith along a weakened portion forming a hinge line and also including partitioned walls to divide the underside of the body into compartments and to strengthen the body, the brush, combs, wheels and handle may be readily attached to the moulded body by a simple clipping action.

Hence in one form the invention comprises a carpet sweeper wherein the body of the carpet sweeper includes a top portion, end portions and dust trays hinged to the top portion characterised in that the body is moulded as an integral unit with dust trays hingedly mounted along a line formed by a weakened portion of the body material. Preferably the body is moulded from a suitable plastics material.

In another aspect the invention provides a carpet sweeper wherein the wheels are mounted on the combs which are pivoted on the body so that the combs themselves provide a crank axle system whereby the wheels are maintained in contact with the brush with a force dependent upon the downward force applied on the sweeper.

Additionally the invention also provides in another form a carpet sweeper in which the handle is directly attached to the brush which is free to move in the body of the sweeper so that the brush is applied to the surface being swept by the force on the handle.

Additionally also the invention provides a ready attachment means for attaching the handle proper to that part of the handle which engages the brush.

One form of the carpet sweeper which embodies the invention will now be described although it is to be realised that the invention is not to be limited to the following preferred embodiment but is to include all modifications and equivalents thereof falling within the broad concepts of the invention.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of the carpet sweeper according to the invention,

FIG. 2 is a cross sectional view along the lines 2-2 of FIG. 1,

FIG. 3 is an exploded perspective view of the carpet

sweeper, the carpet sweeper being inverted for clarity,

FIG. 4 is a sectional view of the attachment member and the handle bracket,

FIG. 5 is a view of the reverse side of the bundle bracket, and

FIG. 6 is a sectional view of part of the attachment member and the handle bracket.

DESCRIPTION OF PREFERRED EMBODIMENT

The body 1 of moulded plastic material includes a planar top portion 2 with the dust tray 3 being hinged to the top portion 2 along the hinge lines 4 on the opposite sides of the top portion. Each dust tray 3 is substantially channel shaped in cross section with partially closed in ends 5. In this way, when the dust trays 3 are closed the upper leg 6 of each channel forms as it were a continuation of the top portion of the body, the base 7 of the channel forming the edge of the body and the lower leg 8 extending inwardly underneath the body to terminate adjacent a comb 9 against which the brush 10 can operate. As noted above the trays 3 are hinged to the top portion 2 by the hinge line 4 which is formed by a weakened portion of the material from which the body and trays are moulded.

A strengthening partition wall 11 is formed adjacent each end of the body 1 to form with the end portions 12 of the body a recess 13 in which the wheels 14 of the sweeper operate. These partitions 11 and end portions 12 at each end of the body 1 extend beyond each hinge line 4 on the top portion 2 and are similarly shaped to the contour of the dust trays 3.

The strengthening partition walls 11 carry the supporting wheels 14 and the combs 9 in a manner to be later described. Also these walls 11 have formed therein a central slot 15 in which the brush 10 operates.

The brush 10 is of normal construction with a driving surface 16 formed at each end thereof, and each end is formed with a hole 17 on the axis of the brush 10 in which the ends of the handle bracket 18 are adapted to engage. The handle bracket 18 is formed of metal strip and is bent into U shape, the outer ends 19 of the arms of the U being provided with inwardly directed pins 20 which engage in the holes 17 at the ends of the brush 10, a suitable aperture 21 being provided in the end portions 12 of the body 1 to allow the pins 20 to pass therethrough. Each aperture 21 has fitted therein a flanged grummet 22 in such a way that the grummet 22 has a degree of movement in the aperture 21, particularly in the vertical direction although it is preferred that this movement be in all directions.

The base of the U of the handle bracket has the metal strip twisted at 23 so that the plane of the strip is in the plane of the bracket and the handle 24 is attached thereto. This is preferably accomplished by the handle 24 at its lower end being provided with a slotted member 25 adapted to slide along the bracket 18. To retain the member 25 in position on the bracket 18 a pair of closely spaced abutments 29 are pressed out on one side of the bracket in its central position and the member has a resiliently biased spigot 30 formed on each side of the slot, so that no matter which way the sliding member 25 is inserted with the slot being of as it were a crucifix shape, the abutments can, when the sliding member is moved to its central position, pass through one of the arms of the slot and the spigot 30 can engage in the space between the abutments 29.

The sliding member 25 is preferably moulded of plastics material and the spigot 30 on each side being part of a resilient portion 32 attached at only its ends to the member 25 so that the spigot 30 can be depressed to pass over one abutment 29 and be located in the space between the abutments 29. In this way the handle 24 can be easily attached by simply slipping the member 25 over the bracket 18 and sliding the member to its central position.

As the handle 24 is directly attached to the brush 10, and as the pins 20 on the ends of the bracket 13 engage in the holes 17 at the ends of the brush 10, downward pressure on the handle 24 is applied directly to the brush 10 due to the free movement of the grummet 22 in the apertures 21, so that if a carpet with a short or thin pile is being swept, the brush 10 can move downwardly to its operative position with the tufts on the brush being in operative contact with the surface, but if a carpet with a long pile is being swept, as the wheels 14 may sink into the carpet to a degree the brush by the action of the tufts on the carpet will find its own effective operative working height during the to and fro movement of the sweeper.

As noted above the brush 10 is driven by the wheels 14 and these are mounted in a cranked axle manner so that the pressure which is applied to the wheels 14 by downward force on the carpet sweeper, the wheels 14 are moved into engagement with the driving surface 16 on the brush. The wheels 14 are each mounted on an axle 26 which is attached to the comb 9 on each side of the brush on the upper edge of the comb with each comb itself forming the cranked axle. The comb 9 at its lower edge is formed at each end with an attachment member 27 which is adapted to be clipped into a suitable slot 28 in the partition walls 11.

Each comb 9 is formed of a rectangular member with the attachment member 27 at each end to be on the long side of the rectangle and the other long side is provided with the axle 26 on which the wheels 14 are mounted at each end of the axle.

When the combs 9 are clipped into their respective slots 28 the axles move into slots 40 and the wheels into recess 13 and each comb extends upwardly and slightly away from the brush to its upper edge along which the axle 26 of the wheels are connected. Hence when downward pressure is applied to the body, the wheels 14 and comb 9 pivot about the point where the combs 9 are attached to the partition walls 11 and hence move towards the brush. This movement and the pressure which the wheels exert on the driving members of the brush is dependent on the downward force on the body.

In order to maintain the dust trays 3 in either their open or closed position a suitable return spring is provided and is anchored to the top portion 2 and the dust tray 3.

As shown, a coil spring 33 may be used, the spring 33 being attached at one end to the central portion of the underside of the top portion 2, the spring 33 having an extended hook portion 34 so that the coil spring 33 itself is housed in the dust tray 3. The extended hook portion 34 by being bent so that in the open position, as the other end of the spring 33 is attached to the base of the channel member, the bend of the portion 34 is positioned at the hinge line 4. Hence as the dust tray 3 is moved from its closed to its open position, the spring 33 is effective in maintaining the dust tray in either its closed or open position due to the over centre arrange-

ment formed by the respective attachment points of the spring to the body and the dust tray. The closed position of each dust tray is determined by the inner edge of the dust tray abutting against the side face of the respective comb 9.

A bumper guard which is preferably moulded of plastics material extends around the sweeper. This includes forward and rear bumpers 39 and end bumpers 35. The forward and rear bumpers 39 are adapted to be clipped into the base section 7 of the dust trays 3 by studs 36 clipping into holes 37, and the two end bumpers 35 cover the ends of the sweeper and also the sides of the end portion 12, the bumpers having lugs adapted to clip into recesses 38 in the end portions 12.

The sweeper can be assembled and disassembled easily by a simple clipping operation. Thus the wheels are slipped into the axles on the combs, and the combs clipped into the notches on the partition walls. The brush is inserted into the bracket, and the handle bracket sprung slightly to allow the pins to pass into the holes in the ends of the brush and it will be readily seen that by reversing the above steps the sweeper can be readily dismantled.

Hence it will be seen that the present invention provides a simple and economically produced carpet sweeper, the body and dust trays being moulded in one piece and also having strengthening walls on the body which form recesses in which the wheels of the carpet sweeper operate.

Also due to the fact that the brush is directly connected to the handle and is mounted with a degree of freedom of movement in the body and also due to the arrangement of the supporting wheels which drive the brush, the wheels are moved towards the brush so that the wheels and brush are self adjusting in position and have a free rolling action which takes place during both forward and rearward movement of the sweeper.

We claim:

1. A carpet sweeper of the type wherein supporting wheels drive a rotatable brush to sweep debris into dust trays carried on the body portion of the carpet sweeper, characterised by combs pivotally mounted to the said body portion, the combs carrying axles displaced from the pivotal mounting and parallel thereto, the wheels being rotatably mounted on the axles, the combs thus forming crank axle systems supporting the wheels for arcuate movement to and away from the rotatable brush, such that a downward force on the body causes the wheels to move into engagement with the brush.

2. A carpet sweeper as defined in claim 1 wherein the combs are each of rectangular form with the pivotal mounting being at each end thereof and on an axis extending along one side thereof, and the axles also being at each end thereof and on a second axis extending along the other side thereof, the combs being pivoted in partition walls on the body spaced from the ends of the body thus forming recesses in which the wheels of the sweeper operate, the axles on the combs protruding through slots in the partition walls.

3. A carpet sweeper as defined in claim 2 wherein the partition walls have slots through which the ends of the brush protrude, the end portions of the sweeper body having apertures aligned with the operative position of the brush, the sweeper including a handle bracket of substantially U shape, the ends of the arms of the U having pins adapted to freely pass through the aperture and engageable in holes in the ends of the brush, so that

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downward pressure on the handle bracket causes a downward pressure to be applied to the brush due to clearance of the pins in the apertures.

4. A carpet sweeper as defined in claim 2 wherein the body portion and partition walls are integrally moulded 5

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together with dust trays being provided and being hinged to the body portion along a hinge line integrally moulded on the body portion.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,774,257 Dated November 27, 1973

Inventor(s) Donald N. Smyth & Bruce A. Heard

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 28, change "copartments" to --compartments--.

Column 2, line 4, change "bundle" to --handle--.

Column 3, line 11, change "13" to --18--.

Signed and sealed this 9th day of April 1974.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents