

[54] CARPET SWEEPER

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[51] Int. Cl. A47I 9/04, A47I 9/06
[58] Field of Search 15/41 A, 42, 347, 348, 364, 15/365, 371, 388

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[57] ABSTRACT

A carpet sweeper for use with a source of vacuum includes a housing having cooperating wall portions defining an air flow passage therethrough with an entrance adjacent a floor and extending transversely of a path of movement of the sweeper. The housing has a brush chamber adjacent the air flow passage entrance with a rotary brush mounted therein and operative to move dirt toward said entrance. An elongated brush is arranged adjacent said entrance on the opposite side from said rotary brush. The air flow passage has a member connected to a source of vacuum to effect movement of air upperwardly through the flow passage.

6 Claims, 4 Drawing Figures

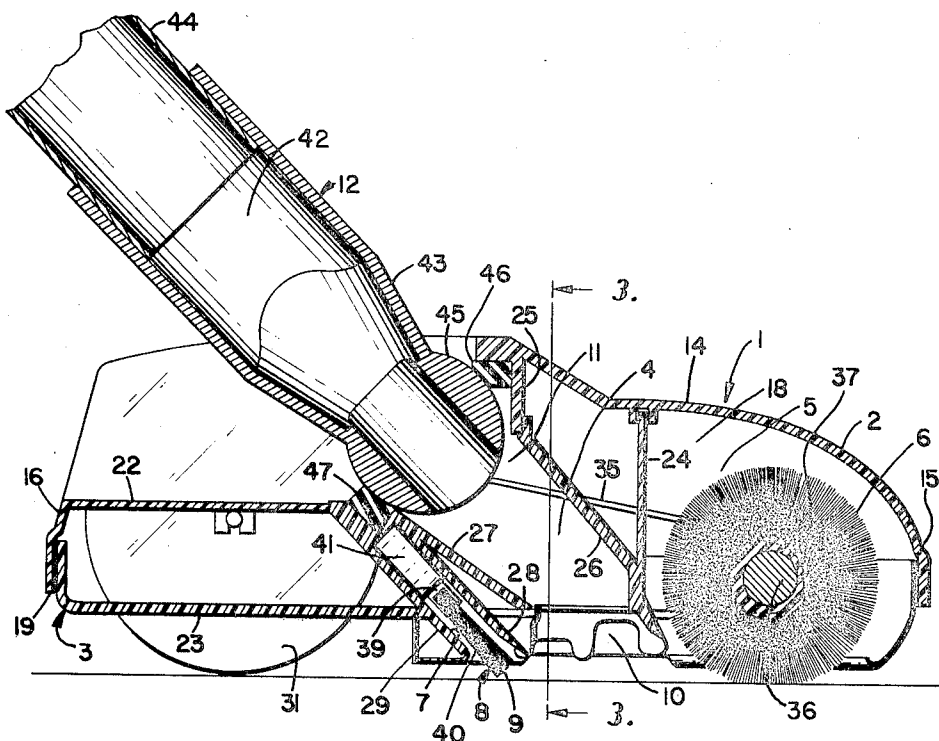


Fig. 1.

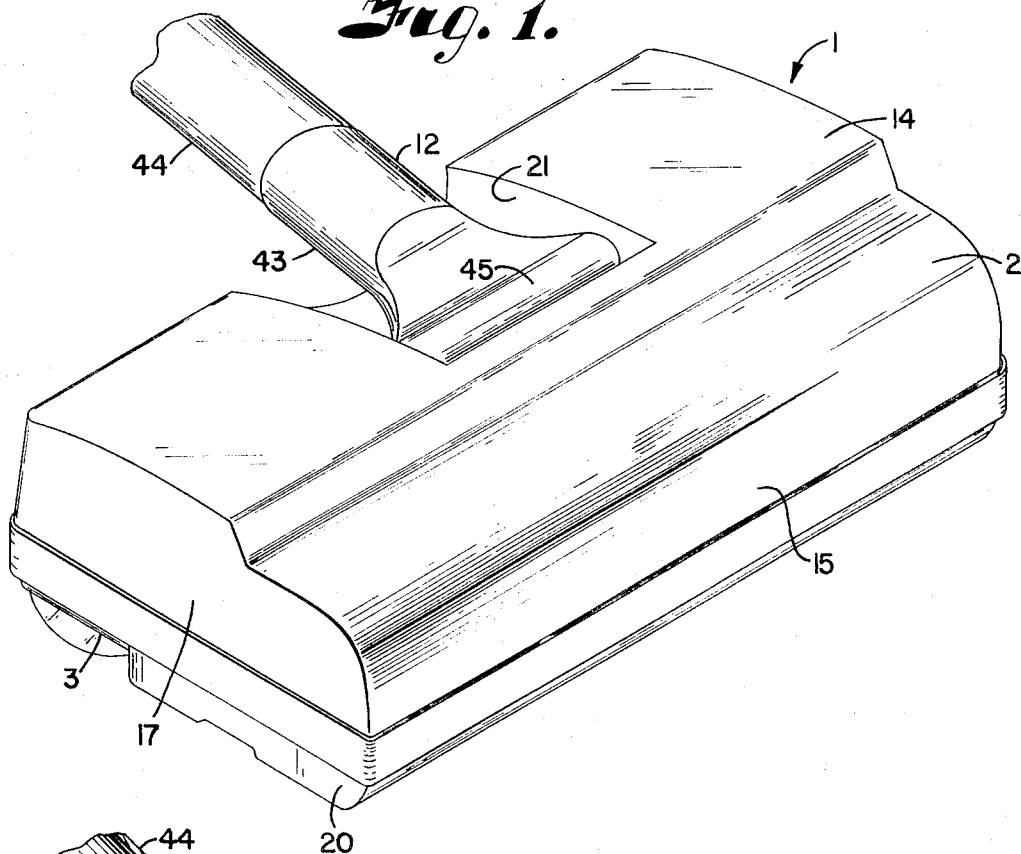


Fig. 2.

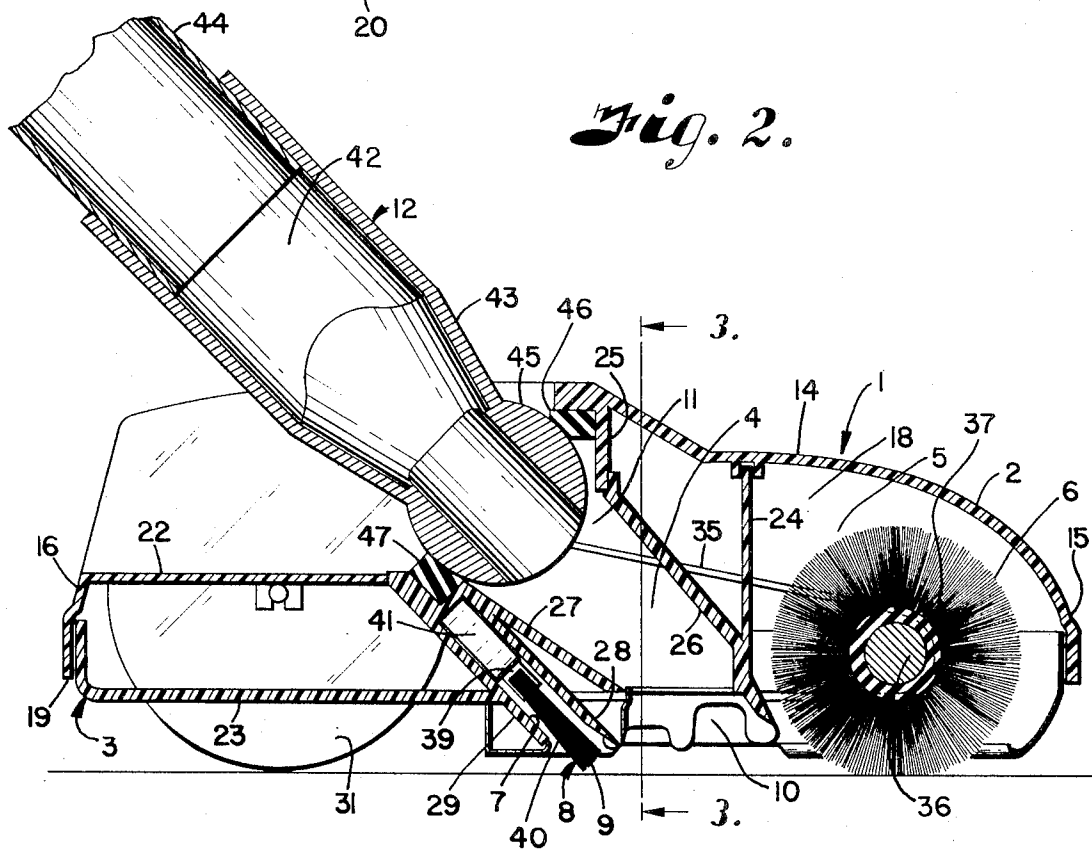


Fig. 3.

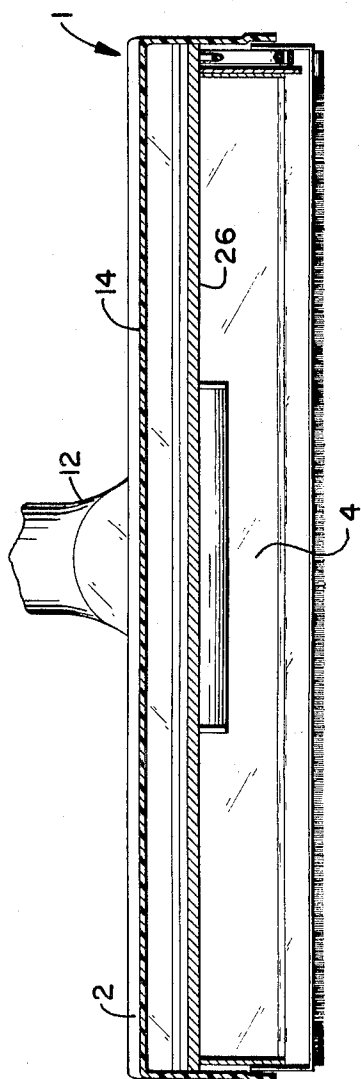
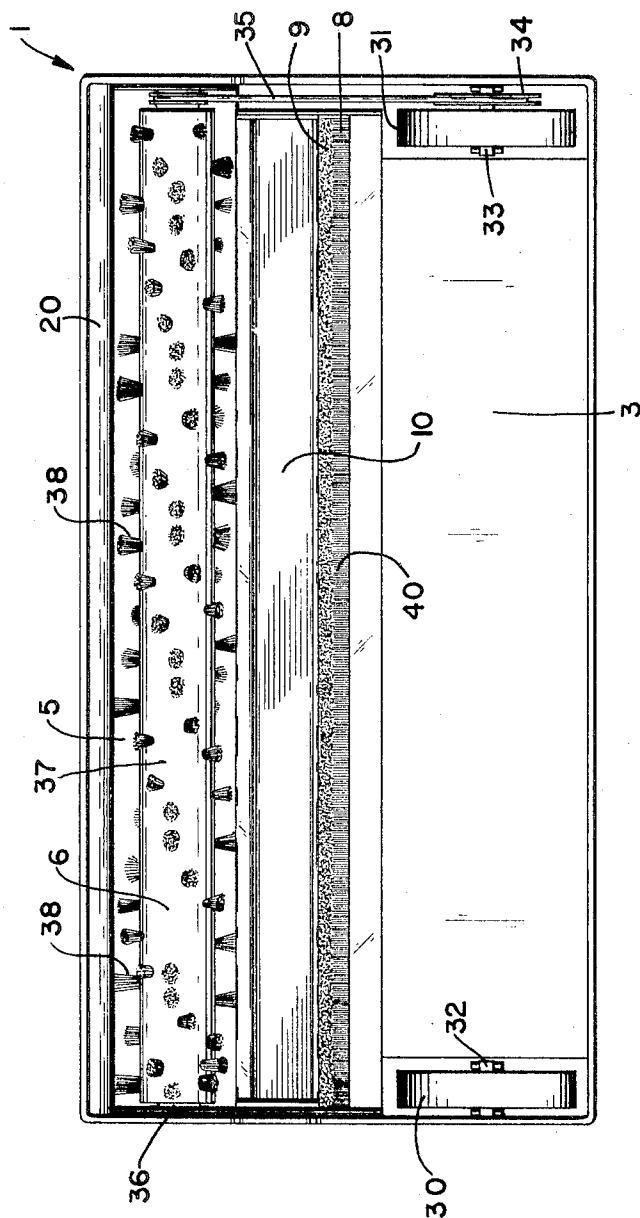


Fig. 4.



CARPET SWEEPER

The present invention relates to a carpet sweeper and more particularly to a carpet sweeper for use with a source of vacuum and having a rotary brush and a stationary brush on respective opposite sides of an entrance to an air flow passage.

The principal objects of the present invention are: to provide a carpet sweeper for use with a source of vacuum to remove dirt lifted by brushes of the sweeper; to provide such a carpet sweeper having a rotary brush adapted to be rotated toward an intake or entrance of an air flow passage in response to movement of the carpet sweeper in one direction over a carpet surface; to provide such a carpet sweeper having an elongated auxiliary brush having a free end thereof directed toward an entrance to the air flow passage whereby the rotary brush and the elongated auxiliary brush cooperate to move dirt toward the entrance to the air flow passage in response to movement of the carpet sweeper over the carpet surface in one direction; to provide such a carpet sweeper wherein means for rotating the rotary brush include sweeper supporting wheels and one way clutch means whereby rotation of the periphery of the rotary brush is toward an entrance to the air flow passage after engaging the carpet surface; to provide such a carpet sweeper with a nozzle on conduit portion communicating with the air flow passage and movable between a substantially horizontal position and a substantially vertical position; to provide such a carpet sweeper wherein the elongated auxiliary brush is resiliently mounted in the housing to thereby urge the free end of the elongated auxiliary brush into engagement with a carpet surface; and to provide such a carpet sweeper which is durable in construction, positive in operation, economical to manufacture, and particularly well adapted for the proposed use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention. The drawings constitute a part of this specification and include an exemplary embodiment of the present invention and illustrate various objects and features of the floor sweeper attachment.

FIG. 1 is a perspective view of a carpet sweeper attachment embodying features of the present invention.

FIG. 2 is a transverse sectional view through the carpet sweeper and showing operative components thereof.

FIG. 3 is a longitudinal sectional view taken on line 3—3, FIG. 2 and showing construction of the housing for the carpet sweeper.

FIG. 4 is a bottom plan view of the carpet sweeper and showing relative positions of the component parts thereof.

Referring more in detail to the drawings:

As required, detailed embodiments of the present invention are disclosed herein, however, it is to be understood that the disclosed embodiments are merely exemplary of the invention which may be embodied in various forms. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to vari-

ously employ the present invention in virtually any appropriate detailed structure.

In the disclosed embodiment of the present invention, the reference numeral 1 generally designates a carpet sweeper for use with a source of vacuum (not shown). The carpet sweeper 1 includes a housing having an upper piece 2 and a lower piece 3 having cooperating wall portions defining an air flow passage 4 therethrough and defining a brush chamber 5 adjacent one side of the flow passage 4 and having a rotary brush 6 mounted therein and defining an elongated inclined recess 7 adjacent the other side of the flow passage 4 and having an elongated auxiliary brush 8 therein with a free end 9 thereof adjacent an entrance 10 to the flow passage 4 and an exit 11 of the flow passage 4 has a conduit portion 12 therein and adapted to be connected to a source of vacuum (not shown) to effect movement of air upwardly through the flow passage 4.

In the illustrated embodiment, the upper piece 2 of the housing has a top portion 14 with front and rear wall portions 15 and 16 respectively depending from front and rear edges of the top portion 14 and opposite end wall portions 17 and 18 extending between respective opposite ends of the front and rear wall portions 15 and 16 and extending from respective opposite ends of the top portion 14. The wall portions 15, 16, 17, and 18 of the upper piece 2 of the housing each have a lower edge 19 forming a lower periphery of the upper piece 2 of the housing and providing support for the lower piece 3 of the housing and a skirt 20, as later described.

The upper piece 2 of the housing has wall portions therein to define a recess in the top portion 14 which is shaped and sized to permit the conduit portion or member 12 to be moved between a substantially horizontal position and a substantially vertical position. In the illustrated structure, longitudinally spaced intermediate wall portions 21 depend from the top portion 14 and a lower wall portion 22 extends between respective lower edges of the intermediate wall portions 21. The recess defined by the spaced intermediate wall portions 21 and the lower wall portion 22 is substantially centered in the upper piece 2 of the housing and a forward end of the recess is defined by an edge of the top portion 14 extending between the intermediate wall portions 21 and a forward edge of the lower wall portion 22. A rear end of the recess extends through the rear wall portion 16 of the upper piece 2 of the housing to thereby permit the conduit portion or member 12 to pivot to a substantially horizontal position. The edges of the top portion 14 and the lower wall portion 22 define the exit 11 in the top portion 14 and are positioned in generally parallel spaced apart relation to each other to engage an exterior surface of the conduit portion 12, as later described.

The lower piece 3 of the housing is illustrated as being mounted on and below the upper piece 2 of the housing and has a bottom wall portion 23 and a front wall portion 24 extending upwardly from the bottom wall portion 23 of the lower piece 3 of the housing and engaging the top portion 14 of the upper piece 2 of the housing thereby enclosing a substantial portion of the housing. The bottom wall portion 23 of the lower piece 3 of the housing extends between the front wall portion 24 of the lower piece 3 of the housing and the rear wall portion 16 of the upper housing 2. The air flow passage

4 and the elongated inclined recess 7 are positioned within the lower piece 3 of the housing.

The front wall portion 24 of the lower piece 3 of the housing is spaced from the front wall portion 15 of the upper piece 2 and cooperates therewith to define a brush chamber within the housing with the rotary brush 6 being suitably mounted therein.

The skirt 20 is mounted on the upper piece 2 of the housing and depends from the lower edge 19 of the front wall portion 15 and portions of the end wall portions 17 and 18 of the upper piece 2 of the housing. The skirt 20 extends rearwardly of the inclined recess 7 and the elongated auxiliary brush 8 therein to thereby retain dirt, dust, and the like within a substantially enclosed space adjacent the entrance 10 to the air flow passage 4.

In the illustrated structure, the air flow passage 4 is defined by cooperating wall portions in the upper and lower housings pieces 2 and 3 of the housing and includes a depending wall 25 extending generally downwardly from the top portion 14 and between the intermediate wall portions 21. Spaced and inclined front and rear walls 26 and 27 are formed in the lower piece 3 of the housing with the front wall 26 extending from the front wall portion 24 of the lower housing 3 and into mounting engagement with the depending wall 25 and with the rear wall 27 extending from the entrance 10 to the exit 11. The rear wall 27 is integral with wall portions forming the recess 7 having the elongated brush 8 therein.

The elongated inclined recess 7 is illustrated as being formed in the lower piece 3 of the housing and includes inclined and spaced front and rear walls 28 and 29 respectively with the inclined front wall 28 and rear wall 29 extending between the end wall portions 17 and 18 of the upper piece 2 of the housing. The rear wall 29 is in mounting engagement with the forward edge of the lower wall portion 22 which defines the recess receiving the conduit portion 12 therein.

The entrance 10 to the air flow passage 4 is positioned between the rotary brush 6 and the elongated brush 8 with both brushes being adapted to urge debris, such as dust, dirt, lint, and the like, toward the entrance 10.

Movement of the carpet sweeper 1 over a carpet surface, such as a rug, carpet, or the like is operative to effect rotation of the rotary brush 6. In the illustrated structure, at least one supporting wheel and preferably two supporting wheels 30 and 31 are suitably rotatably mounted on one of the upper piece 2 of the housing and the lower piece 3 of the housing for providing mobile support for the carpet sweeper 1. In the illustrated structure, the wheels 30 and 31 are mounted on suitable axles 32 and 33 respectively extending inwardly from the end wall portions 17 and 18 of the upper piece 2 of the housing and positioned adjacent the rear wall portion 16 to thereby provide mobile support for the carpet sweeper 1.

It is desirable that the rotary brush 6 rotate only toward the entrance 10 to the air flow passage 4 whereby debris, such as dirt, dust, lint, and the like, dislodged by the rotary brush 6 will be moved only toward the air flow passage 4. Therefore, suitable one way clutch means 34 operatively engages at least one of the wheels and suitable motion transmitting means 35, such as a suitable belt, operatively engages the one way clutch means 34 and the rotary brush 6 whereby the ro-

tary brush 6 is rotated in one direction only in response to movement of the carpet sweeper 1.

The rotary brush 6 has opposite ends thereof suitably rotatably supported on the upper housing 2, as by suitable bearings, bushings, or the like, mounted on the end wall portions 17 and 18 and preferably within the brush chamber. The illustrated rotary brush 6 has a suitable axle 36 extending between the end wall portions 17 and 18 and the axle 36 has a body 37 mounted thereon and suitable bristles are mounted on the body 37 to engage the carpet surface, such as a rug, carpet, or the like, as the carpet sweeper attachment 1 is moved thereover. The bristles may be arranged in any desired pattern, however, in the illustrated structure, the bristles are arranged in groups 38 with the groups of bristles 38 being arranged in a spiral pattern and having the free ends of the bristles defining the periphery of the rotary brush 6 whereby the periphery of the rotary brush is moved toward the entrance 10 to the air flow passage 4 after engaging the carpet surface, such as a rug, carpet, or the like.

The elongated auxiliary brush 8 is positioned on the opposite side of the entrance 10 to the air flow passage 4 and, in the illustrated structure, a body portion 39 has a plurality of bristles 40 therein with the free end of the bristles being adjacent the entrance 10 to the air flow passage 4. Suitable resilient means 41, such as a plurality of leaf springs or the like, is mounted in the elongated inclined recess 7 at the closed end thereof and is operative to urge the free end of the bristles 40 into engagement with the carpet surface, such as a rug, carpet, or the like, whereby forward movement of the carpet sweeper 1 effects movement of debris, such as dirt, dust, lint, and the like, toward the entrance 10 to the air flow passage 4 by engagement of the free end of the bristles 40 with the respective surface.

The conduit portion or member 12 is mounted in the exit 11 of the air flow passage 4 and has a flow passage 42 extending therethrough to permit air flow through the air flow passage 4 and to a suitable source of vacuum (not shown). The conduit portion or member 12 has a body portion 43 adapted to be connected to a suitable source of vacuum, such as a hose or wand 44 of a suitable vacuum cleaner.

The conduit member 12 has an end portion 45 adapted to be mounted in the exit 11 of the air flow passage 4 and in the illustrated structure, the end portion 45 is generally cylindrical in shape with the exterior surface thereof being engageable with suitable spaced seal member 46 and 47 mounted on the rear edge of the top portion 14 and extends between the intermediate wall portions 21 and on the forward edge of the lower wall portion 22 and also extends between the intermediate wall portions 21 whereby the conduit member 12 is pivotally mounted on the carpet sweeper 1 and movable between a generally horizontal position and a generally vertical position.

In using a carpet sweeper constructed as illustrated and described, the carpet sweeper 1 is moved in a generally forward direction, as by pushing on the hose or wand 44 and the forward movement of the carpet sweeper 1 effects rotation of the wheels 30 and 31 and thereby operation of the one way clutch means 34 and the motion transmitting means 35 which effects rotation of the rotary brush 6 through engagement of the motion transmitting means 35 with the axle 36 of the rotary brush 6. Forward motion of the carpet sweeper

1 also effects engagement of the free end of the bristles 40 of the auxiliary brush 8 with the respective surface having the carpet sweeper 1 moving thereover whereby the rotary brush 6 and the elongated auxiliary brush 8 cooperate to move debris, such as dirt, dust, lint, and the like toward the entrance 10 to the air flow passage 4 during such forward movement. Air flow through the air flow passage 4 as effected by the source of vacuum is effective to move the debris, such as dirt, dust, lint, and the like, upwardly through the air flow passage 4, nozzle portion 12, and the hose or wand 44. Rearward movement of the carpet sweeper 1 permits the rotary brush 6 to remain substantially stationary and permits the elongated auxiliary brush 8 to slide over the respective surface in preparation for the next forward movement of the floor sweeper attachment 1.

It is to be understood that while I have illustrated and described one form of my invention, it is not to be limited to the specific form and arrangement of parts herein described and shown.

What I claim and desire to secure by Letters Patent is:

1. A carpet sweeper comprising:

- a. a housing having an upper piece and having a top portion and front and rear wall portions and opposite end wall portions;
- a lower piece of said housing mounted on said upper piece of said housing and having a bottom wall portion and a front wall portion cooperating with said upper piece for forming a substantially closed housing with a transverse bottom opening, said bottom wall portion of said lower piece of said housing extending between said front wall portion thereof and the rear wall portion of said upper piece of said housing;
- c. a rotary brush mounted between the front wall portion of said upper piece of said housing and the front wall portion of said lower piece of said housing and having a periphery thereof extending through said bottom opening and engageable with a carpet surface;
- d. means mounted on one of said upper piece of said housing and said lower piece of said housing and engageable with the carpet surface and operatively engaging said rotary brush for effecting rotation of said rotary brush in response to movement of said upper and lower pieces of said housing in one direction over the carpet surface;
- e. cooperating wall means in said upper piece of said housing and said lower piece of said housing for defining a passage through the enclosed portion of said housing and having an entrance adjacent the front wall portion of said lower piece of said housing and an exit in the top portion of said upper piece of said housing;
- f. a conduit having a flow passage therethrough and having one end portion thereof mounted in the exit of said passage and communicating therewith, said conduit being adapted to be connected to a source of vacuum to thereby effect movement of air through said passage;
- g. means in said lower piece of said housing to define an elongated recess therein and positioned adjacent the entrance to said passage, said recess being inclined downwardly from adjacent the top portion of said upper piece of said housing and toward the entrance to said passage; and

h. an elongated brush and means resiliently mounting said elongated brush in said recess, said brush having a free end thereof engageable with the carpet surface in response to urging of said means resiliently mounting said elongated brush, the free end of said elongated brush being adjacent the entrance to said passage.

2. A carpet sweeper as set forth in claim 1 wherein:

- a. said means for effecting rotation of said rotary brush includes at least one supporting wheel rotatably mounted on one of said upper piece of said housing and said lower piece of said housing and engageable with the carpet surface and having one way clutch means operatively connecting said wheel and motion transmitting means operatively connecting said one way clutch means and said rotary brush whereby said rotary brush is rotated in one direction only;
- b. said rotary brush has the periphery thereof moved toward the entrance to said passage after engaging the carpet surface; and
- c. the entrance to said passage is positioned between said rotary brush and said elongated brush.

3. A carpet sweeper as set forth in claim 2 wherein:

- a. said housing having edges defining the exit in the top portion of said upper piece;
- b. two of the edges defining the exit in the top portion are positioned in generally parallel spaced apart relation;
- c. said upper piece of said housing has wall portions in the top portion thereof defining a recess to receive said end portion of said conduit;
- d. said end portion of said conduit has a generally cylindrical exterior surface engaging the two generally parallel edges defining the exit in the top portion of said upper piece of said housing whereby said conduit is pivotally mounted on said housing; and
- e. said recess in said top portion being shaped to permit said conduit to be moved between a substantially horizontal position and a substantially vertical position.

4. A carpet sweeper as set forth in claim 2 wherein:

- a. said top portion of said upper piece of said housing has wall portions defining a recess therein and extending through the rear wall portion of said upper piece of said housing;
- b. said passage exit is an elongate opening defined by edges of the top portion of said upper piece of said housing
- c. said elongated opening is positioned in one of the wall portions defining the recess in said top portion of said upper piece of said housing;
- d. two of the edges defining the elongated opening in said top portion of said upper piece of said housing are positioned in generally parallel spaced apart relation; and
- e. said one end portion of said conduit having a generally cylindrical exterior surface engaging the two generally parallel edges defining the elongated opening in said top portion of said upper piece of said housing whereby said conduit is pivotally mounted on said housing.

5. A carpet sweeper comprising:

- a. a housing having a top portion and front and rear wall portions and opposite end wall portions;

- b. a bottom wall portion mounted on said housing and cooperating with said top portion front, rear and end walls for forming a substantially closed housing with a transverse bottom opening;
- c. a rotary brush mounted adjacent the front wall of said housing and engageable with a carpet surface; 5
- d. means mounted on said housing and engageable with the carpet surface and operatively connected with said rotary brush for effecting rotation thereof in response to movement of said housing in one direction over the carpet surface; 10
- e. means in said bottom wall portion to define a passage therethrough and having an entrance adjacent said rotary brush for receiving debris swept thereinto by said rotary brush; 15
- f. a conduit communicating with the passage, said conduit being adapted to be connected to a source of vacuum to thereby effect movement of air through said passage;
- g. said bottom wall portion has a generally upright front portion having an upper edge thereof in engagement with the top portion of said housing, said front portion of said bottom wall portion is spaced from the front wall portion of said housing and extends between the end wall portions of said housing to thereby define a brush chamber within said housing; 20 25
- h. said means for effecting rotation of said rotary brush includes at least one supporting wheel rotatably mounted on said housing and having one way clutch means operatively connected to said wheel and motion transmitting means operatively connecting said one way clutch means and said rotary brush whereby said rotary brush is rotated in one direction only; 30 35
- i. said rotary brush has a periphery thereof moved toward the entrance to said passage after engaging the carpet surface;
- j. said bottom wall portion has wall means therein to define an elongated recess adjacent and substantially parallel with the entrance to said passage; 40
- k. said elongated recess is in spaced relation with said rotary brush and with the entrance to said passage therebetween;
- l. an elongated brush is positioned within said recess and having a free end thereof engageable with the carpet surface; 45
- m. the free end of said elongated brush is positioned adjacent the entrance to said passage whereby said elongate brush and said rotary brush cooperate in moving debris toward the entrance to said passage; 50
- n. said top portion of said housing has wall portions defining a recess therein;

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- o. said top portion of said housing has edges defining an elongated opening therein;
- p. said elongated opening is positioned in one of the wall portions defining the recess in said top portion of said housing;
- q. two of the edges defining the elongated opening in the top portion of said housing are positioned in generally parallel spaced apart relation; and
- r. said conduit has an end portion having a generally cylindrical exterior surface engaging the two generally parallel edges defining the elongated opening in the top portion of said housing whereby said conduit is pivotally mounted on said housing.
- 6. A carpet sweeper comprising:
 - a. a housing having a top portion and front and rear wall portions and opposite end wall portions;
 - b. a bottom wall portion mounted on said housing and cooperating with said top portion, front, rear and end walls for forming a substantially closed housing with a transverse bottom opening;
 - c. a rotary brush mounted adjacent the front wall of said housing and engageable with a carpet surface;
 - d. means mounted on said housing and engageable with the carpet surface and operatively connected with said rotary brush for effecting rotation thereof in response to movement of said housing in one direction over the carpet surface;
 - e. means in said bottom wall portion to define a passage therethrough and having an entrance adjacent said rotary brush for receiving debris swept thereinto by said rotary brush;
 - f. a conduit communicating with the passage, said conduit being adapted to be connected to a source of vacuum to thereby effect movement of air through said passage;
 - g. means in said bottom wall portion to define an elongated recess therein and positioned adjacent the entrance to said passage, said recess being transverse of the housing, said recess being inclined downwardly from adjacent the top portion of the housing and toward the entrance to said passage with the entrance of said passage being between the rotary brush and elongate recess;
 - h. an elongate brush and means resiliently mounting said elongate brush in said recess, said brush having a free end thereof engageable with the carpet surface in response to urging of said means resiliently mounting said elongate brush, the free end of said elongate brush being adjacent the entrance to said passage whereby said elongate brush and said rotary brush cooperate in moving debris toward the entrance to said passage.

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