23 and 25. The floating scoop 22 acts as an outlet for air and entrained particles (dust) leaving the housing 22.

FIG. 5 is a section view, taken along the line 5—5 of FIG. 2, showing portions of the housing 18, the pad driver 50, the pad 52 and the floating hoop assembly generally identified by the numeral 20. The housing 18 includes a vertical sidewall 54, which surrounds the pad 52 and the pad driver 50. A bumper 70 is positioned about the outer edge of the housing 18. The floating hoop assembly 20 includes a clamp 72, a flexible nylon skirt 74, the circular hoop 76 and the felt follower 78. The clamp 72 attaches the skirt 74 to the bumper 70 and the housing 18. The skirt 74 can be formed from Nylon, or other flexible material such as but not limited to canvas.

The floating hoop assembly 20 is fully extended because the pad 52 is new and has not yet been worn down by operations. The height of the pad 52 may vary as much as Â¼ inch due to wear. The housing 18, the sidewall 54 and the pad driver 50 define an upper flow passageway 80, only a portion of which is shown in this drawing. The upper flow passageway 80 includes all of the area between the pad driver 50 and the housing surrounded by the sidewall 54. Ambient air from outside the machine 10 enters the upper flow passageway 80 through the inlet 30, shown in FIG. 2. Due to the rotation of the pad 52, the air swirls around in a clockwise fashion in the upper flow passageway 80 and becomes entrained with particulate (dust).

A circumferential flow passageway 82 is generally defined by an outer edge 84 of the pad 52, the floating hoop assembly 20 and the floor. Air passing through the inlet 30 likewise passes into the circumferential flow passageway 82. Due to the rotation of the pad 52, the air swirls around in a clockwise fashion in the circumferential flow passageway 82 and becomes entrained with particulate (dust). The floating scoop 22 defines an outlet for the air and particulate (dust), the floating scoop 22 being in communication with both the upper flow passageway 80 and the circumferential flow passageway 82.

FIG. 6 is a section view, similar to FIG. 5, showing portions of the housing 18, the pad driver 50 and the floating hoop assembly 20, except the pad has been worn and is thinner than the new pad 52 in FIG. 5. The worn pad is given a new numeral 86 to differentiate it from the new pad 52. The area of the circumferential passageway 82 decreases with wear of the pad 86. For this reason, it is important to have a scoop 22 that floats up and down with the hoop assembly 20. The scoops of the dust control apparatus in the Speed Star™ and the Revolution™ floor cleaning machines by Pioneer EclipseÂ® are filed in position and do not float up or down with pad wear.

FIG. 7 is a section view of a portion of the housing 18, a portion of the pad 52 and a portion of the floating hoop assembly 20 showing the floating scoop 22 in overlay. This figure shows that the floating scoop 22 is in communication with the upper flow passageway. 80 and the circumferential flow passageway 82.

FIG. 8 is a section view, taken along the line 8—8 of FIG. 2, showing the circular container canister 28 and the removable filter 100. The canister 28 includes a lid 102, a circular wall 104, a shoulder 106 to support the filter 100, and a valley 108. A filter lid gasket 110 is positioned under the lid 102. The filter is sealed in the canister 28 by the gasket 10, the wall 104 and the shoulder 106. A propane bottle carrier 112 holds the propane tank 14.

Air and entrained particles (dust) enter the canister 28 through the throat 26 and swirl around the canister passageway 120, as better seen in FIG. 2. Heavier particles (dust) fall to the valley 108 as shown by the arrows in FIG. 8. This helps to enhance filter life. Air then passes through the filter 100 as indicated by the flow arrows. After passing through the filter 100, air is exhausted back to atmosphere through the outlet 122 as indicated by the flow arrows in FIG. 8.

To remove the filter, an operator first removes the propane tank 14 from the machine 10. The lid 102 is then opened and the filter 100 can be removed from the canister 28. The filter 100 can either be cleaned and replaced or a new filter 100 can be installed.

Although the preferred embodiment of the present invention has been described in the foregoing specification with considerable detail, it is to be understood that modifications may be made to the invention, which do not exceed the scope of the appended claims and modified forms of the present invention done by others skilled in the art to which the invention pertains will be considered infringements of this invention when those modified forms fall within the claimed scope of this invention.

The invention claimed is:

1. A floor cleaning machine with dust control apparatus, the floor cleaning machine creating dust as a by-product of normal operations, the floor cleaning machine comprising:
- an engine mounted on a frame supported by a wheel, the engine operatively connected to a rotatable pad driver that is capable of attaching a pad thereto, wherein the pad is capable of contacting a floor;
- a rigid housing surrounding the pad driver and pad, the housing having a sidewall, which is substantially vertical;
- an air outlet in the sidewall located at least partially opposite the rotatable pad driver that receives radially projected dust;
- a dust collection mechanism to receive at least a portion of the dust from the air outlet via an air conduit; and
- a floating hoop assembly with a flexible skirt that extends from the sidewall of the rigid housing to a floating circular hoop and felt follower in contact with the floor to assist in containment of at least a portion of the dust created during operation of the floor cleaning machine.

2. The floor cleaning machine with dust control apparatus of claim 1, wherein the dust collection mechanism includes a container mounted on the floor cleaning machine.

3. A floor cleaning machine with dust control apparatus, the floor cleaning machine creating dust as a by-product of normal operations, the floor cleaning machine comprising:
- an engine operatively connected to a rotatable pad driver that is capable of attaching a pad thereto, wherein the pad is capable of contacting a floor;
- a housing surrounding the pad driver and pad, the housing having a sidewall, which is substantially vertical;
- an air outlet in the sidewall located at least partially opposite the rotatable pad driver that receives radially projected dust;
- a dust collection mechanism to receive at least a portion of the dust from the air outlet via an air conduit;
- a floating hoop assembly that extends from the sidewall of the housing to the floor to assist in containment of at least a portion of the dust created during operation of the floor cleaning machine; and
- a floating scoop connected to a portion of the floating hoop assembly.

4. The floor cleaning machine with dust control apparatus of claim 3, further including a throat in fluid communication with the floating scoop to direct at least a portion of the dust away from the pad by creating a suction utilizing a venturi-effect.