ABSTRACT

A discharging duct of an upright-type vacuum cleaner having side walls and a pair of ribs defining a passage portion, the passage portion connecting an air outlet pipe and a motor driving chamber of a cleaner body. A cover is connected to the duct and seals the passage portion. The cover includes side walls and sealing strips integrally formed thereon to tightly contact the ribs, the sealing strips completely contacting an outer surface of the ribs. Accordingly, the contact area of the cover with respect to the ribs of the duct is lengthened, and sufficient sealing effect is guaranteed without having to use a separate sealing member. Since the need for a separate sealing member is eliminated, the duct is easier to assemble and less costly to manufacture.
FIG. 2
(PRIOR ART)
FIG. 6

FIG. 7
DISCHARGING DUCT FOR UPRIGHT-TYPE VACUUM CLEANER

FIELD OF THE INVENTION

[0001] The present invention relates to a vacuum cleaner, and more particularly, to a discharging duct for an upright-type vacuum cleaner having a cyclone dust collecting apparatus therein.

BACKGROUND OF THE INVENTION

[0002] Generally, an upright-type vacuum cleaner has a suction brush movably disposed on a lower portion of a cleaner body, to be moved along a cleaning area during a cleaning operation. The cleaner body is divided into a dust collecting chamber and a motor driving chamber. The motor driving chamber has a motor mounted therein to generate a suction force, while the dust collecting chamber has a dust bag that is removably disposed therein. During the cleaning process, dust-laden air is drawn into the cleaner body through the suction brush, and passes through the dust bag. The dust of the dust-laden air is filtered out at the dust bag, and the clean air is discharged outside of the cleaner body.

[0003] However, the upright-type vacuum cleaner described above is disadvantageous because the dust bag has to be replaced often. In an attempt to overcome this disadvantage, bagless upright-type vacuum cleaners have been introduced. An example of the bagless upright-type vacuum cleaner employs a permanent cyclone dust collecting apparatus rather than a consumable dust bag.

[0004] FIG. 1 shows one example of a bagless upright-type vacuum cleaner with a cleaner body 10 divided into a dust collecting chamber 11, a motor driving chamber (not shown), a suction brush 20 rotatably connected to the cleaner body 10, and a cyclone dust collecting apparatus 30 removably disposed in the dust collecting chamber 11.

[0005] In the above bagless upright-type vacuum cleaner, the dust-laden air is drawn in through the suction brush 20. The air then passes through a suction hose 40, an air inlet pipe 12 and a cyclone inlet pipe 32 into the interior of the cyclone dust collecting apparatus 30. In the cyclone dust collecting apparatus 30, the air is moved in a whirling current along its inner wall. Due to the centrifugal force from the whirling current of air, the dust is separated from the air and collected in the cyclone dust collecting apparatus 30. The clean air is then discharged out of the cyclone dust collecting apparatus 30 via outlet 31, air outlet pipe 13 and discharging duct 50.

[0006] The discharging duct 50 has a passage 51 that connects the air outlet pipe 13 with the motor driving chamber. As shown in FIG. 2, a cover 52 and a sealing member 53 are placed around the passage 51 to seal the discharging duct 50.

[0007] As best shown in FIG. 3, the duct 50 has a substantially rectangular shape, with a pair of ribs 51a being formed at a predetermined distance from side walls 50a of the duct 50. The space between the ribs 51a and the side walls 50a define grooves 51b. The cover 52 has side walls 52a that engage the ribs 51a.

[0008] The sealing member 53 is disposed in the grooves 51b to maintain an air tight seal between the duct 50 and the cover 52. Accordingly, the passage 51 is sealed, and the suction force is maintained and noise is reduced during the cleaning process.

[0009] However, because the sealing member 53 is manufactured as a separate element, the manufacturing and assembly costs are increased. Furthermore, the sealing effect is only guaranteed when the sealing member is tightly pressed by the cover. Therefore, without accurate mounting of the cover, external air flows in, and the suction force of the vacuum cleaner is decreased and increased noise is generated.

SUMMARY AND OBJECTS OF THE INVENTION

[0010] Present invention has been made to overcome the above-mentioned problems of the prior art. Accordingly, it is an object of the present invention to provide a discharging duct for an upright-type vacuum cleaner, which is easier to manufacture and assemble, and has an improved air seal around a passage, without having to use a separate sealing member.

[0011] The above object is accomplished by using a discharging duct having side walls and a pair of ribs defining a groove therebetween. A passage portion is located between the duct side walls and connects an air outlet pipe and a motor driving chamber of the cleaner body. A cover having side walls and an integrally formed sealing strip is connected to the cleaner body and seals the passage portion. The sealing strip is sufficiently sized so that it completely contacts the outer surface of the ribs and inner surface of the duct side walls to seal the passage.

[0012] The sealing strip allows the contact area of the cover with respect to the duct side walls and the ribs to be lengthened, so that the passage is sufficiently sealed without having to use a separate sealing member. Because the sealing member is omitted, the manufacturing and assembly costs are reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The above-mentioned objects and the feature of the present invention will be more apparent by describing the preferred embodiment of the present invention in detail referring to the appended drawings, in which:

[0014] FIG. 1 is a front perspective view for schematically showing the structure of a conventional upright-type vacuum cleaner;

[0015] FIG. 2 is a rear perspective view for schematically showing the structure of an upright type vacuum cleaner employing a conventional discharging duct;

[0016] FIG. 3 is a sectional view taken along line I-I of FIG. 2;

[0017] FIG. 4 is a rear perspective view for schematically showing the structure of an upright type vacuum cleaner employing a discharging duct according to a preferred embodiment of the present invention;

[0018] FIG. 5 is a sectional view taken along line II-II of FIG. 4;

[0019] FIG. 6 is a graph comparing the suction force between the vacuum cleaner employing the discharging duct
according to the present invention and the vacuum cleaner employing the conventional discharging duct; and

[0020] FIG. 7 is a graph comparing the noise generated between the vacuum cleaner employing the discharging duct according to the present invention and the vacuum cleaner employing the conventional discharging duct.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0021] The present invention will be described in greater detail with reference to the accompanying drawings.

[0022] FIG. 4 is a perspective view for schematically showing the structure of an upright-type vacuum cleaner employing a discharging duct according to a preferred embodiment of the present invention. FIG. 5 is a sectional view taken along line II-II of FIG. 4. FIGS. 6 and 7 are graphs showing a comparison of the levels of suction force and noise, respectively, between a vacuum cleaner employing a discharging duct according to the present invention and a vacuum cleaner employing a conventional discharging duct. Throughout the description, like elements are given the same reference numeral.

[0023] The upright-type vacuum cleaner having a discharging duct according to the present invention has a construction similar to that of a conventional upright-type vacuum cleaner. The difference lies in the structure of the discharging duct. As shown in FIGS. 4 and 5, the upright-type vacuum cleaner according to the present invention includes a suction brush 20, a cleaner body 10, and a discharging duct 60 formed in the rear of the cleaner body 10. A description of the cleaner body 10 and the suction brush are omitted here since they are identical to and have already been described above in relation to the vacuum cleaner employing a conventional discharging duct.

[0024] The discharging duct 60 of the present invention connects the air outlet pipe 13 of the cleaner body 10 with the motor driving chamber. The duct 60 includes side walls 60a and ribs 61a, which in cooperation with a cover 62 define an air passage 61.

[0025] The duct 60 is generally square shaped, with the ribs 61a being formed at a predetermined distance from an inner surface of the side walls 60a. The space between the ribs 61a and the side walls 60a define grooves 61b.

[0026] The cover 62 is connected to the duct 60 to seal the passage 61, and has side walls 62a with integrally formed sealing strips 64 that engage ribs 61a of the duct 60. The sealing strips 64 are inserted into the grooves 61b and completely engage the ribs 61a when the cover 62 is connected. Accordingly, a sufficient sealing effect is provided without having to use a separate sealing member.

[0027] Although it is preferred that the sealing strip 64 engage the outer surface of the ribs 61a, the invention is not so limited. For example, the sealing strip 64 can be formed to engage the inner surface of the ribs 61a, or can be formed to engage both sides of the ribs 61a. Furthermore, the cover 62 can be provided with a supporting plate 63 for fixing the suction hose 40, or the like.

[0028] In the upright-type vacuum cleaner constructed according to the present invention, dust-laden air is drawn in through the suction brush 20, and flows to the cyclone dust collecting apparatus 30 via the suction hose 40. Dust is separated by the centrifugal force of the whirling air in the cyclone dust collecting apparatus 30, and the clean air is discharged. The discharged air flows into the motor driving chamber through the passage 61 defined by the discharging duct 60 and the cover 62, and then is discharged to the outside of the cleaner body 10. Since there are large contact areas between the sealing strips 64 of the cover and the duct side walls 60a and ribs 61a, air leakage between the passage 61 and the outside rarely occurs.

[0029] Since external air does not leak into the passage-way 61 during the cleaning process, the suction force is maintained and noise generation is reduced. FIGS. 6 and 7 show the level of suction force and noise respectively, between a vacuum cleaner having a discharging duct 60 of the present invention (indicated by solid lines) compared to a vacuum cleaner having a conventional discharging duct 60 (indicated by dotted line). Axis "N" in the graph of FIG. 6 indicates the number of times that suction force of respective levels is measured, while that in the graph of FIG. 7 indicates the number of times that noise of respective levels is measured. As shown in the graphs, a vacuum cleaner using the discharging duct 60 of the present invention increases the level of suction force by approximately 40 W (watts), while the decreasing the noise level approximately 2 dB (decibels).

[0030] Since the contact area between the cover side walls 62a with respect to the duct side walls 60a and ribs 61a is increased, a sufficient seal is provided without having to use a separate sealing member. Since a separate sealing member is omitted, the vacuum cleaner is easier to assemble and its manufacturing cost are decreased.

[0031] Although the preferred embodiment of the present invention has been described, it will be understood by those skilled in the art that the present invention should not be limited to the described preferred embodiment, but various changes and modifications can be made within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A discharging duct of an upright-type vacuum cleaner, comprising:
   a pair of side walls and a pair of ribs formed adjacent the side walls;
   the side walls defining a passage portion connecting an air outlet pipe and a motor driving chamber of a cleaner body; and
   a cover attached to the side walls of the duct, the cover having side walls and sealing strips integrally formed thereon, the sealing strips contacting the ribs to seal the passage portion.

2. The discharging duct of an upright-type vacuum cleaner of claim 1, wherein the sealing strip completely contacts an outer surface of the ribs.